
H18 AT Command User Guide

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1 *Introduction*

1.1 Introduction to Interface between TE and MS

In order to communicate each other between TE and MS, we must use AT commands. Figure 1.1 illustrates the interface. In section 2, we will divide the content into ten subsections. They are about SIM, list management, mobility management, call control, supplementary service, short message, cell broadcast, base-band and the other service.

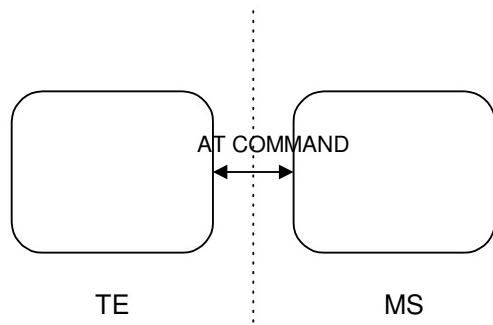


Figure 1.1

Explanation

ME	Mobile equipment
MS	Mobile station. Basically, a mobile station is mobile equipment with a SIM card.
TE	Terminal Equipment that is the same as the controller in this case.

Getting started

For testing AT commands, the MS can be connected to any computer environment, as long as it has a V.24/V.28 serial interface. The commands can be issued with, for example, HyperTerminal in Microsoft Windows or other emulator programs.

Syntax description

The section gives a brief description of the syntax used for the command set. The MS may echo characters received, depending on the setting of the command E. As a default, echo is enabled, and characters are echoed at the same rate, parity, and format as received.

The character defined by parameter S5 (default, BS, IRA 8) is interpreted as request from the TE to delete the previous character.

- <CR> Carriage return character, whose value is specified by command S3, default IRA 13.
- <LF> Line feed character, whose value is specified by command S4, default IRA 10.
- <....> The name enclosed in angle brackets is a syntactical element. The brackets do not appear in the command line.
- Strings enclosed in square brackets are optional items
- [...] (sub-parameters). The brackets do not appear in the command line.

Other characters, including '?', '=', parentheses, etc, appear in commands and response as written.

AT command syntax

A command line is made up of three elements: the prefix, the body and the termination character. The command line prefix consists of the characters 'AT'.

MS supports a set of commands referred to as basic syntax commands, and a set of extended syntax commands, the latter prefixed with a plus sign (+).

Basic syntax command

The format of basic syntax commands, except for the command D, is as follows:

<name>[<value>]

Example: ATV1<CR> (set text form result codes)
 <CR><LF>OK<CR><LF>(response)

Extended syntax command

+<name>[=<value>]

Example: AT+CMUT=0<CR> (the representation of signal strength)
 <CR><LF>OK<CR><LF>(response)

Test command syntax

+<name>=?

Example: ATS3=?<CR>(show supported S3 values)

```
<CR><LF>S3: (0-127)<CR><LF>
<CR><LF>OK<CR><LF>
```

Read command syntax

+<name>?

Example: AT+CACM?<CR>(show current accumulated call meter value)
<CR><LF>+CACM: "0"<CR><LF>(response)
<CR><LF>OK<CR><LF>

If the indicated name is not recognized, an Error code is issued.

AT response syntax

The default response is text mode that is shown below. See the command V for further details. The format of a response is as follows:

```
<CR><LF>[<response>]<CR><LF>
```

The <response> can be:

- Basic format result code, such as OK.
- Extended syntax result code, prefixed with a plus sign (+):

+<name>: <value>

The result codes are separate by commas if it's included several values. The <value> followed by the colon is separated by a space. It is also possible that result codes have no value. Unlike basic format result codes, extended syntax result codes have no numeric equivalent, and are always issued in alphabetic form.

There are two types of result code responses:

Final result code

A final result code indicates to the TE that execution of the command is completed and another command may be issued.

If you typed an implemented AT command, you should get the result code OK.

If you typed an AT command that was not implemented, or which had the wrong parameter or syntax, you will get the result code ERROR or else, for example, +CME ERROR followed by an error code.

Unsolicited result code

Unsolicited result codes, such as RING, indicate the occurrence of an event not directly associated with a command being issued from TE.

1.2 Initial the Test Environment

Initial the HyperTerminal.

- Start HyperTerminal
- Name a new connection
- Select the connection port
- Initial the connection port with 115200 bps and none flow control

Initial the MS.

- Put the SIM card into ME and power on the ME.
- Start all of AT Commands with “AT+CFUN=1”
- Camp on the cell with “AT+COPS=0”

2 Implemented AT commands for MS

2.1 Commands specified by GSM REC.27.07

2.1.1 General Commands

2.1.1.1 Request manufacturer identification +CGMI

Table: +CGMI parameter command syntax

Command	Possible response(s)
+CGMI	<manufacturer> +CME ERROR: <err>

Description

Read handset or model's manufacturer's ID.

Defined values

<manufacturer>: total number of characters shall not exceed 2048.

Informative examples

-Initial the HyperTerminal

-Initial the MS

-AT Command

AT+CGMI<CR>

<manufacturer>

2.1.1.2 Request model identification +CGMM

Table: +CGMM parameter command syntax

Command	Possible response(s)
+CGMM	<model> +CME ERROR: <err>

Description

Read model information which determined by ME manufacturer.

Defined values

<model id>: string type

Informative examples

- Initial the HyperTerminal
- Initial the MS without SIM card
- AT Command

AT+CGMM <CR>

H18

2.1.1.3 Request revision identification +CGMR

Table: +CGMR parameter command syntax

Command	Possible response(s)
+CGMR	<revision> +CME ERROR: <err>

Description

Read revision of ME. It may include software and hardware revision.

Defined values

<revision>: information text

Informative examples

- Initial the HyperTerminal
- Initial the MS without SIM card
- AT Command

AT+CGMR<CR>

QisdaSWVer:H18_UNSIGNED_SW0.01,Build Info: M6260-KPRBL-1540,Boot
Block ver: 1,Build Data: Dec 04 2009, Build Time: 10:49:56

2.1.1.4 Request product serial number identification +CGSN

Table: +CGSN parameter command syntax

Command	Possible response(s)
+CGSN	<IMEI> OK +CME ERROR: <err>

Description

Read serial number identification which determined by ME manufacturer.

Defined values

<sn>: total number of characters shall not exceed 2048 characters.

Informative examples

- Initial the HyperTerminal
- Initial the MS without SIM card
- AT Command

AT+CGSN<CR>

359095000360270

OK

2.1.1.5 Select TE character set +CSCS

Table: +CSCS parameter command syntax

Command	Possible response(s)
+CSCS=[<chset>]	OK ERROR
+CSCS?	+CSCS: <chset>
+CSCS=?	+CSCS: (list of supported <chset>s)

Description

Set command informs TA of which character set “<chset>” is used by the TE. TA is then able to convert character strings correctly between TE and ME character sets.

When TA-TE interface is set to 8-bit operation and used TE alphabet is 7 bit, the highest bit shall be set to zero.

Read command returns the current setting and test command displays conversion schemes implemented in the TA.

Defined values

<chset>: string type

Command	Possible response(s)
“IRA” (default)	International reference alphabet
“GSM”	GSM default alphabet
“UCS2”	16-bit universal multiple-octet coded character set; UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF. ; e.g. “004100620063” equals three 16-bit characters with decimal values 65,98 and 99.

Informative examples

- Initial the HyperTerminal
- Initial the MS without SIM card
- AT Command

(1)

```
AT+CSGS=? <CR>
+CSGS: ("IRA","GSM","UCS2")
OK
```

(2)

```
AT+CSGS= "GSM"
+CSGS: "GSM"
OK
AT+CSGS? <CR>
+CSGS: "GSM"
OK
```

(3)

```
AT+CSGS ="GSM"
OK
AT+ CPBR =1,10
+CPBR: 1,"0920933828",129,"Tina"
+CPBR: 2,"+886227998800",145,"Qisda"
+CPBR: 3,"123456789",129,"test"
+CPBR: 4,"876425",129,"qwe"
+CPBR: 5,"7514876543",129,"afe"
OK
AT+CSGS ="UCS2"
OK
AT+CPBR =1,10
```

```
+CPBR: 1,"0920933828",129,"00540069006E0061"
+CPBR: 2,"+886227998800",145,"00420065006E0051"
+CPBR: 3,"123456789",129,"0074006500730074"
+CPBR: 4,"876425",129,"007100770065"
+CPBR: 5,"7514876543",129,"006100660065"
OK
```

2.1.1.6 Request international mobile subscriber identity +CIMI

Table: +CIMI parameter command syntax

Command	Possible response(s)
+CIMI	<IMSI> OK +CME ERROR:<err>

Description

Execution command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual SIM that is attached to ME.

Defined values

<IMSI>: International Mobile Subscriber Identity (string without double quotes)

Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CIMI

466880100493652

OK

2.1.1.7 PCCA STD-101[17] select wireless network +WS46

Table: +WS46 parameter command syntax

Command	Possible response(s)
+WS46=[<n>]	OK
+WS46?	+WS46: <n>
+WS46=?	(list of supported <n>s)

Description

Read command shows current setting and test command displays side stacks implemented in the TA.

Defined values

<n>:12 GSM digital cellular
22 WCDMA digital cellular
25 WCDMA+GSM digital cellular

Informative example

- Initial the HyperTerminal
- Initial the MS without SIM card
- AT Command

```
AT+WS46=?  
+WS46: (12,22,25)  
OK
```

```
AT+WS46?  
+WS46: 12  
OK
```

2.1.2 Call control commands

2.1.2.1 Select Type of Address +CSTA

Table: +CSTA parameter command syntax

Command	Possible response(s)
+CSTA=<type>	OK
+CSTA?	+CSTA: <type>
+CSTA=?	+CSTA: (list of supported <type>s)

Description

Set command selects the type of number for further dialing command (D) according to GSM/UMTS specifications. Test command returns values supported by the TA as a compound value.

Defined values

<type>: type of address octet in integer; default 145 when dialing string

includes international access code character “+”, otherwise 129.

Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CSTA=?

+CSTA: (129,145)

OK

AT+CSTA?

+CSTA: 129

OK

AT+CSTA=145

OK

AT+CSTA?

+CSTA: 145

OK

2.1.2.2 Call mode +CMOD

Table: +CMOD parameter command syntax

Command	Possible response(s)
+CMOD=[<mode>]	OK
+CMOD?	+CMOD: <mode>
+CMOD=?	+CMOD: (list of supported <mode>s)

Description

Set command selects the call mode of further dialing commands (D) or for next answering command (A). Mode can be either single or alternating. Test command returns values supported by the TA as a compound value.

Defined values

<mode>: 0 single mode

Informative examples

- Initial the HyperTerminal

- Initial the MS
- AT Command
 - AT+CMOD=?
+CMOD: (0)
OK

- AT+CMOD?
+CMOD: 0
OK

2.1.2.3 Hang up call +CHUP

Table: +CHUP parameter command syntax

Command	Possible response(s)
+CHUP	OK
+CHUP=?	OK

Description

Execution command causes the TA to hang up the current GSM/UMTS call of the ME.

2.1.2.4 Select bearer service type +CBST

Table: +CBST parameter command syntax

Command	Possible response(s)
+CBST=[speed>[,<name>[,<ce>]]]	
+CBST?	+CBST: <speed>,<name>,<ce>
+CBST=?	+CBST: (list of supported <speed>s),(list of supported <name>s), (list of supported <ce>s)

Description

Set command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated. Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls.

Test command returns values supported by the TA as compound values.

Defined values

<speed> (in bps):

- 0 – autobaud
- 7 – 9600 (V.32)
- 12 – 9600 (V.34)
- 14 – 14400 (V.34)
- 16 – 28800 (V.34)
- 17 – 33600 (V.34)
- 39 – 9600 (V.120)
- 43 – 14400 (V.120)
- 48 – 28800 (V.120)
- 51 – 48000 (V.120)
- 71 – 9600 (V.110)
- 75 – 14400 (V.110)
- 80 – 28800 (V.110)
- 81 – 38400 (V.110)
- 83 – 56000 (X.31 flag stuffing, UDI/RDI)[see note]
- 84 – 64000 bps (X.31 flag stuffing, UDI)[see note]
- 116 – 64000 bps
- 134 – 64000 bps(multimedia)

<name>:

- 0 – Data circuit asynchronous
- 1 – Data circuit synchronous
- 4 – Data circuit asynchronous (RDI)

<ce>:

- 0 – Data transparent
- 1 – Data nontransparent

Note: this setting can be used in conjunction with asynchronous
nontransparent UDI/RDI service in order to get Frame Tunneling
mode

Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+CBST=?

CBST: (0,7,12,14,16,17,39,43,48,51,71,75,80,81,83,84,116,134),(0,1,4),(0,1)

OK

AT+CBST?

+CBST: 0,0,1

OK

2.1.2.5 Radio link protocol +CRLP

Table: +CRLP parameter command syntax

Command	Possible response(s)
+CRLP=[<iws>[,<mws>[,<T1>[,<N2>]]]]	
+CRLP=?	+CRLP: <iws>,<mws>,<T1>,<N2> [<CR><LF>+CRLP:<iws>,<mws>,<T1>,<N2> [...]]
+CRLP=?	+CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s),

Description

Radio link protocol (RLP) parameters used when non-transparent data calls are originated may be altered with set command. Available command sub-parameters depend on the RLP versions implemented by the device (currently version 0,1(default), 2 are supported).

Read command returns current setting for supported RLP version. Test command returns values supported by the TA as a compound value.

Defined values

<iws>: IWF to MS window size

<mws>: MS to IWF window size

<T1>: acknowledgement timer, in units of 10 ms.

<N2>: retransmission attempts

For Version 0 and 1, the following parameter values are supported:

<iws> – 0 to 61 frames

<mws> – 0 to 61 frames
<T1> – 38 to 255 x 10 ms
<N2> – 1 to 255 retransmits

For Version 2, the following parameter values are supported:

<iws> – 0 to 488 frames
<mws> – 0 to 488 frames
<T1> – 42 to 255 x 10 ms
<N2> – 1 to 255 retransmits

Informative examples

-Initial the HyperTerminal
-Initial the MS
-AT Command

```
AT+CRLP=?  
+CRLP: (0-61),(0-61),(38-255),(1-255),0  
+CRLP: (0-61),(0-61),(38-255),(1-255),1  
+CRLP: (0-488),(0-488),(42-255),(1-255),2  
OK
```

```
AT+CRLP?  
+CRLP: 61,61,48,6,0  
+CRLP: 0,0,38,1,1  
+CRLP: 240,240,52,6,2  
OK
```

2.1.2.6 Service reporting control +CR

Table: +CR parameter command syntax

Command	Possible response(s)
+CR=[<mode>]	OK
+CR?	+CR: <mode>
+CR=?	+CR: (list of supported <mode>s)

Description

Set command controls whether or not intermediate result code +CR: <serv> is returned from the TA to the TE. If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the TA has

determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code CONNECT is transmitted.

Defined values

<mode> :

- 0 disables reporting
- 1 enables reporting

<serv>:

- ASYNC asynchronous transparent
- SYNC synchronous transparent
- REL ASYNC asynchronous non-transparent
- REL SYNC synchronous non-transparent

Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

```
AT+CR=?  
+CR: (0,1)  
OK
```

```
AT+CR?  
+CR: 0  
OK
```

```
AT+CR=1  
+CR:1  
OK
```

```
/* Setup a data call */  
ATD024496688;  
+CR: RELASYNC
```

```
CONNECT
```

2.1.2.7 Extended error report +CEER

Table: +CEER parameter command syntax

Command	Possible response(s)
+CEER	+CEER: <report>

Description

Execution command causes the TA to return one or more lines of information text <report>, determined by the ME manufacturer, which should offer the user of the TA an extended report of the reason for

- the failure in the last unsuccessful call setup or in-call modification;
- the last call releases;

Typically, the text will consist of a single line containing the cause Information given by GSM/UMTS network in textual format.

Defined values

<report>: the total number of characters shall not exceed 2041 characters. See Section 0 for more information of <report>. Or see 3GPP TS 24.008.

Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+CEER

+CEER: No cause information available

OK

ATD0920933828;

OK

AT+CHUP

OK

AT+CEER

+CEER: Client ended call

OK

2.1.2.8 Cellular result codes +CRC

Table: +CRC parameter command syntax

Command	Possible response(s)
+CRC=[<mode>]	
+CRC?	+CRC: <mode>
+CRC=?	+CRC: (list of supported <mode>s)

Description

Set command controls whether or not the extended format of incoming call indication is used. When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING.

Test command returns values supported by the TA as a compound value.

Defined values

<mode> :

- 0 disables extended format
- 1 enables extended format

<type>

- ASYNC asynchronous transparent
- SYNC synchronous transparent
- REL ASYNC asynchronous non-transparent
- REL SYNC synchronous non-transparent
- FAX facsimile (TS 62)
- VOICE normal voice (TS 11)
- VOICE/XXX voice followed by data (BS81) (XXX is ASYNC, SYNC, REL ASYNC or REL SYNC)
- ALT VOICE/XXX alternating voice/data, voice first (BS 61)
- ALT XXX/VOICE alternating voice/data, data first (BS 61)
- ALT VOICE/FAX alternating voice/fax, voice first (TS 61)
- ALT FAX/VOICE alternating voice/fax, fax first (TS 61)

GPRS <PDP_type>, <PDP_addr>[,<L2P>][,<APN>]] GPRS network request for PDP context activation

<PDP_type>, <PDP_addr> and <APN> are as defined in the Define PDP Context (+CGDCONT) command. The optional <L2P> proposes a layer 2 protocol to use between the MT and the TE. It is defined in the Enter GPRS Data Mode (+CGDATA) command.

Informative example

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+CRC?

+CRC: 0

OK

AT+CRC=?

+CRC: (0,1)

OK

AT+CRC=1

OK

+CRING: VOICE (MT call)

2.1.2.9 Dial command D

ATD<dial string>[I/I] [G/g] [:]

When semicolon character is given after dialing digits (or modifiers), a voice call originated to the given address.

I or I (override the CLIR supplementary service subscription default value for this call; I=invocation (restrict CLI presentation) and i = suppression (allow CLI presentation)).

G or g (control the CUG supplementary service information for this call; uses index and info values set with command +CCUG).

Direct dialing from phonebooks

1. ATD><str>[I] [G] [:]

Originate call to phone number which corresponding alphanumeric field is <str> (if possible, all available memories should be searched for the correct entry).

2. ATD>mem<n> [I] [G] [:]

Originate call to phone number in memory “mem” entry location <n> (mem is

“SM”, “LD”, “MC”, “ME”, “RC”, “MT” or “SN”. Available memories may be queried with Select Phonebook Storage test command +CPBS=?)

3. ATD><n> [I] [G] [:]

Originate call to phone number in entry location <n> (it is manufacturer specific which memory storage of ME, SIM/UICC and TA is used; command Select Phonebook Memory Storage +CPBS setting is recommended to be used).

Informative examples

- Initial the HyperTerminal
- Initial the MS
- Initial the alpha id of first physical record in AND is “A”
- AT Command
 - (1) Dial number 188

ATD188;

OK

- (2) Dial number in phonebook index 6.

AT+CPBS?

+CPBS: "SM",37,100

OK

ATD>SM6;

OK

2.1.3 Network service related commands

2.1.3.1 Subscriber number +CNUM

Table: +CNUM parameter command syntax

Command	Possible response(s)
+CNUM	[+CNUM: [<alpha1>],<number1>, <type1> [...<CR><LF>+CNUM: [alphaX],<numberX>, <typeX>]] OK +CME ERROR:<err>

Description

Set command returns the MSISDN related to the subscriber (this information

can be stored in the SIM or in the ME.) If subscriber has different MSISDN for different services, each MSISDN is returned in a separate line (<CR><LF>).

Defined values

<number>: string type; phone number

<alpha>: string type; optional alphanumeric string associated with

<number>: used character set should be the one selected with command
Select TE Character Set +CSCS.

<type>: integer value

129 National

145 International

Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Power on MS but SIM is not ok

AT+CPIN?

+CME ERROR: 10

AT+CNUM

+CME ERROR: 10

(2) Power on MS and SIM is ok

AT+CPIN?

+CPIN: READY

OK

AT+CNUM

+CNUM: "ABC","0920123456",129

OK

(3) Write record

AT+CPBS="ON"

OK

AT+CPBW=1,"0960530355",,"WM0"

OK

AT+CPBR=1

+CPBR: 1,"0960530355",129,"WM0"

```
OK
AT+CNUM
+CNUM: "WM0","0960530355",129
OK
```

2.1.3.2 Network registration +CREG

Table: +CREG parameter command syntax

Command	Possible response(s)
+CREG=[<n>]	+CME ERROR:<err>
+CREG?	+CREG: <n>,<stat> +CME ERROR:<err>
+CREG=?	+CREG: (list of supported <n>s)

Description

Set command controls the presentation of an unsolicited result code code +CREG: <stat>when <n>=1.

Read command returns the status of result code presentation and an integer <state> which shows whether the network has currently indicated the registration of the ME.

Test command returns a list of supported <n>.

Defined values

<n>: integer value

- 0 <default> Disable network registration unsolicited result code.
- 1 Enable network registration unsolicited result code +CREG: <stat>.

<state>: integer value

- 0 Not registered, ME is not currently searching a new operator to register to (NO SERVICE)
- 1 Registered, home network
- 2 Limiting Service: not registered but ME is currently searching a new operator to register to
- 3 Limiting Service: registration denied

4	Unknown
5	Registered, roaming

Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

(1) Disable network registration unsolicited result code

AT+CREG=0

OK

(2) Enable network registration unsolicited result code

AT+CREG=1

OK

(3) Returns the status of current network registration.

AT+CREG?

+CREG: 1,1

OK

(4) Query all status:

AT+CREG=?

+CREG: (0-1)

OK

2.1.3.3 Operator selection +COPS

Table: +COPS parameter command syntax

Command	Possible response(s)

+COPS=[<mode>[,<format> t> [,<oper>[,<AcT>]]]]]	+CME ERROR: <err>
+COPS?	1) +COPS: <mode>[,<format>,<oper>[,<AcT>]] 2) +CME ERROR: <err>
+COPS=?	1) +COPS: [list of supported (<stat>,long alphanumeric <oper> ,short alphanumeric <oper>,numeric <oper>[,<AcT>])s] [,,(list of supported <mode>s),(list of supported <format>s)] 2) +CME ERROR: <err>

Description

Set command forces an attempt to select and register the GSM/UMTS network operator. <mode> is used to select whether the selection is done automatically by the MT or is forced by this command to operator <oper> (it shall be given in format <format>) to a certain access technology, indicated in <AcT>. If the selected operator is not available, no other operator shall be selected (except <mode>=4). If the selected access technology is not available, then the same operator shall be selected in other access technology. The selected operator name format shall apply to further read commands (+COPS?) also. <mode>=2 forces an attempt to deregister from the network. The selected mode affects to all further network registration (e.g. after <mode>=2, MT shall be unregistered until <mode>=0 or 1 is selected). Refer subclause 9.2 for possible <err> values. This command should be abortable when registration/deregistration attempt is made.

Read command returns the current mode, the currently selected operator and the current Access Technology. If no operator is selected, <format>, <oper> and <AcT> are omitted.

Test command returns a set of five parameters, each representing an operator present in the network. A set consists of an integer indicating the availability of the operator <stat>, long and short alphanumeric format of the name of the operator, numeric format representation of the operator and access technology. Any of the formats may be unavailable and should then be an empty field. The

list of operators shall be in order: home network, networks referenced in SIM or active application in the UICC (GSM or USIM) in the following order: HPLMN selector, User controlled PLMN selector, Operator controlled PLMN selector and PLMN selector (in the SIM or GSM application), and other networks. It is recommended (although optional) that after the operator list TA returns lists of supported <mode>s and <format>s. These lists shall be delimited from the operator list by two commas.

NOTE: The access technology selected parameters, <AcT>, should only be used in terminals capable to register to more than one access technology. Selection of <AcT> does not limit the capability to cell reselections, even though access technology is selected, the phone may still re-select a cell in other access technology.

Defined values

<mode>: integer value

- | | |
|---|--|
| 0 | automatic (<oper> field is ignored) |
| 1 | manual (<oper> field shall be present, and <AcT> optionally) |
| 2 | deregister from network |
| 3 | set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> and <AcT> fields are ignored); this value is not applicable in read command response |
| 4 | manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered |

<format>: integer value

- | | |
|---|----------------------------------|
| 0 | long format alphanumeric <oper> |
| 1 | short format alphanumeric <oper> |
| 2 | numeric <oper> |

<oper>: string type; <format> indicates if the format is alphanumeric or numeric; long alphanumeric format can be upto 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]); numeric format is the GSM Location Area Identification number (refer TS 24.008 [8] subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T

E.212 Annex A [10], plus a two BCD digit network code, which is administration specific; returned <oper> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 3)(network code digit 2)(network code digit 1)

<state>: integer value

0	unknown
1	available
2	current
3	forbidden

<AcT>: integer value

0	GSM only
2	WCDMA only

Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

(1) network connection

--GSM only
AT+COPS=0,,0
ERROR

--WCDMA only
AT+COPS=0,,,2
OK
AT+ WS46?
+WS46: 22
OK

-- WCDMA and GSM
AT+COPS=0
OK
AT+ WS46?
+WS46: 25
OK

AT+COPS?
+COPS: 0,0,"Far EasTone Tele",2
OK

(2) List all available network and manual selection of network

AT+COPS=?
+COPS: (1,"Far EasTone Tele","Far EasT","46601",0),(2,"Far EasTone Tele","Far EasT","46601",2),(1,"KG Telecom","KGT","46688",0),(3,"Taiwan Cellular ","TWNGSM","46697",2),(3,"Chunghwa Telecom","Chunghwa","46692",2),(3,"","","46689",2),(3,"Chunghwa Telecom","Chunghwa","46692",0),(3,"Taiwan Cellular ","TWNGSM","46697",0),(0,1,3,4),(0,1,2)
OK

AT+COPS=1,2,"46692",0
OK

2.1.3.4 Facility Lock AT+CLCK

Table: +CLCK parameter command syntax

Command	Possible response(s)
+CLCK=<fac>,<mode>[,<passwd>]	Right: OK When <mode>=2 and command successful: Right: +CLCK: <status>[,<class>] Wrong: +CME ERROR: <er>
+CLCK=?	+CLCK: (list of supported <fac>s) +CME ERROR: <err>

Description

Execution command is used to lock, unlock or interrogate a ME or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a network service (<mode>=2) the response line for ‘not active’ case (<status>=0) should be returned only if service is not active for any <class>. This command should be abortable when network facilities are set or interrogated.

Call barring facilities are based on GSM supplementary services. The interaction of these with other commands based on other GSM supplementary services is described in the GSM standard.

Test command returns facility values supported by the TA as compound value.

Defined Values

<fac>:

- “AB” All Barring services
- “AC” All incoming barring services
- “AG” All outgoing barring services
- “AI” BAIC (Barr All Incoming Calls)
- “AO” BAOC (Barr All Outgoing Calls)
- “IR” BIC-Roam (Barr Incoming Calls when Roaming outside the home country)
- “OI” BOIC (Barr Outgoing International Calls)
- “OX” BOIC-exHC (Barr Outgoing International Calls except to Home Country)
- “SC” PIN enabled (<mode>=1) / disabled (<mode> = 0)
- “PN” Network personalization of the ME
- “PU” Network subset personalization of the ME
- “PP” Service provider personalization of the ME
- “PC” Corporate personalization of the ME
- “PF” Personalization on first inserted SIM

<mode>:

- 0 Unlock
- 1 Lock
- 2 Query status

<status>:

- 0 Not active
- 1 Active

<password>: string type, indicate PIN or network password

<class>: integer type, sum of integers each representing a class(default 7)

- 1 Voice

2	Data
4	Fax
8	Short message
16	Data circuit sync
32	Data circuit async
64	Dedicated packet access
128	Dedicated PAD access

Informative examples

-Initial the HyperTerminal

-Initial the MS

-AT Command

AT+CLCK=?

+CLCK:

("AB","AC","AG","AI","AO","IR","OI","OX","SC","PN","PU","PP","PC","PF")

OK

(1) Enable PIN with “1234”

AT+CLCK=”SC”,1,”1234”

OK

(2) Disable PIN

AT+CLCK=”SC”,0,”1234”

OK

(3) Query the PIN lock status

AT+CLCK=”SC”,2

+CLCK: 0

OK

(4) Activate all outgoing calls barring

AT+CLCK=”AO”,1,”1234”

OK

(5) Disable all outgoing calls barring

AT+CLCK=”AO”,0,”1234”

OK

2.1.3.5 Change password +CPWD

Table: +CPWD action command syntax

Command	Possible response(s)

+CPWD=<fac>, <oldpwd>, <newpwd>	+CME ERROR: <err>
+CPWD=?	+CPWD: list of supported (<fac>, <pwdlength>)s +CME ERROR: <err>

Description

Action command sets a new password.

Defined values

<fac>:

“AB” All Barring services

“SC” PIN enabled (<mode>=1) / disabled (<mode> = 0)

“P2” SIM PIN2

<oldpwd>, <newpwd>: string type; <oldpwd> shall be the same as password specified for the facility from the ME user interface or with command Change Password +CPWD and <newpwd> is the new password; maximum length of password can be determined with <pwdlength>

<pwdlength>: integer type maximum length of the password for the facility

Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CPWD=?

+CPWD: ("AB",4),("SC",8),("P2",8)

OK

2.1.3.6 Calling line identification presentation +CLIP

Table: +CLIP parameter command syntax

Command	Possible response(s)
+CLIP=[<n>]	
+CLIP?	+CLIP: <n>, <m>
+CLIP=?	+CLIP:(list of supported <n>)

Description

This command enables a called subscriber to get the calling line identity (CLI)

of the calling party when receiving a mobile terminated call.

Defined values

<n>: integer type, sets /shows the result code presentation status in TA

0	Disable
1	Enable

<m>: integer type, shows the subscriber CLIP service status in the network

0	CLIP not provisioned
1	CLIP provisioned
2	Unknown (e.g. no network, etc.)

Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

(1) ACTIVATE

```
AT+CLIP=1  
OK  
AT+CLIP?  
+CLIP: 1, 1
```

(As incoming call occurs, ms will display the unsolicited result code.)

RING

```
(1)+CLIP: "0920123456",129,"","APPLE",0 (AT+CSCS="IRA")  
(2)+CLIP: "",128,,,1
```

(2) DEACTIVATE

```
AT+CLIP=0  
OK  
AT+CLIP?  
+CLIP:0,1
```

(3) INTERROGATION

```
AT+CLIP?  
+CLIP: 0,1  
OK
```

2.1.3.7 Call line identification restriction +CLIR

Table: +CLIR parameter command syntax

Command	Possible response(s)
+CLIR=[<n>]	
+CLIR?	+CLIR: <n>, <m>
+CLIR=?	+CLIR:(list of supported <n>)

Description

This command allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call. Set command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command. Read command gives the default adjustment for all outgoing calls (given in <n>), and also triggers an interrogation of the provision status of the CLIR service (given in <m>). Test command returns values supported by the TA as a compound value.

Defined values

<n>: integer type, sets the adjustment for outgoing call

- | | |
|---|--|
| 0 | Presentation indicator is used according to CLIR service |
| 1 | CLIR invocation |
| 2 | CLIR suppression |

<m>: integer type, shows the subscriber CLIR service status in the network

- | | |
|---|---|
| 0 | CLIR not provisioned |
| 1 | CLIR provisioned |
| 2 | Unknown (e.g. no network, etc.) |
| 3 | CLIR temporary mode presentation restricted |
| 4 | CLIR temporary mode presentation allowed |

Informative examples

- Initial the HyperTerminal
 - Initial the MS
 - AT Command
 - (1) DEACTIVATE
- ```
AT+CLIR=2
OK
```

ATD<phone num>; (CLIR suppression, the called party will receive the calling number.)

OK

(2) ACTIVATE

AT+CLIR=1

OK

ATD<phone num>; (CLIR invocation, the called party will not receive the calling number.)

After invocation of the CLIR, the called party will not receive the calling subscriber's phone number.

(3) INTERROGATION

AT+CLIR?

+CLIR: 0,4

OK

It means the current setting is according to the subscription of the CLIR service. And the service status in the network is "Temporary mode presentation allowed".

#### 2.1.3.8 Connected line identification presentation +COLP

**Table: +COLP parameter command syntax**

| Command     | Possible response(s)           |
|-------------|--------------------------------|
| +COLP=[<n>] |                                |
| +COLP?      | +COLP: <n>, <m>                |
| +COLP=?     | +COLP:(list of supported <n>s) |

#### Description

This command enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network. This command is useful for call forwarding of the connected line.

When enabled (and called subscriber allows),  
+COLP: <number>, <type>[, <subaddr>, <satype>[, <alpha>]] intermediate result code is returned from TA to TE before any +CR or V.25ter response. It is manufacturer specific if this response is used when normal voice call is established.

Read command gives the status of <n>, and also triggers an interrogation of the provision status of the COLP service (given in <m>).

### Define values

<n>(parameter sets/shows the result code presentation status in the TA)

|   |         |
|---|---------|
| 0 | Disable |
| 1 | Enable  |

<m>(parameter shows the subscriber COLP service status in the network)

|   |                                 |
|---|---------------------------------|
| 0 | COLP not provisioned            |
| 1 | COLP provisioned                |
| 2 | Unknown (e.g. no network, etc.) |

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+COLP=?

+COLP: (0,1)

OK

AT+COLP?

+COLP: 0,0

OK

AT+COLP=1

OK

ATD0920123456;

+COLP: ,255,,,"LIN"

OK

## 2.1.3.9 Closed user group +CCUG

Table: +CCUG parameter command syntax

| Command                          | Possible response(s)       |
|----------------------------------|----------------------------|
| +CCUG=[<n>[, <index>[, <info>]]] |                            |
| +CCUG?                           | +CCUG: <n>,<index>, <info> |

### Description

This command allows control of the Closed User Group supplementary service.

Set command enables the served subscriber to select a CUG index to suppress the Outgoing Access (OA), and to suppress the preferential CUG.

### Define values

<N>

- 0 Disable CUG temporary mode
- 1 Enable CUG temporary mode

<Index>

- 0...9 CUG index
- 10 No index (preferred CUG taken from subscriber data).

<Info>

- 0 No information
- 1 Suppress OA
- 2 Suppress preferential CUG
- 3 Suppress OA and preferential CUG

### Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CCUG=?

OK

AT+CCUG?

+CCUG: 0,0,0

OK

## 2.1.3.10 Call forwarding service +CCFC

Table: +CCFC parameter command syntax

| Command                                                                                      | Possible response(s)                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| +CCFC =<reason>, <mode>[, <number>[, <type>[, <class>[, <subaddr>[, <satype>[, <time>]]]]]]] | +CME ERROR: <err><br>When <mode> = 2 and command successful:<br>+CCFC: <status>, <class1>[, <number>, <type>[, <subaddr>, <satype>[, <time>]]]]]<CR><LF>+CCFC: <status>, <class2>[, <number>, <type>[, <subaddr>, <satype>[, <time>]]]]<br>[...]] |
| +CCFC=?                                                                                      | +CCFC: (list of supported <reason>s)                                                                                                                                                                                                              |

## Description

This command allows control of the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.

## Defined values

<Reason>:

- |   |                                 |
|---|---------------------------------|
| 0 | Unconditional                   |
| 1 | Mobil busy                      |
| 2 | No Reply                        |
| 3 | Not reachable                   |
| 4 | All call forwarding             |
| 5 | All conditional call forwarding |

<Mode>:

- |   |              |
|---|--------------|
| 0 | Disable      |
| 1 | Enable       |
| 2 | Query Status |
| 3 | Registration |
| 4 | Erasure      |

<Class x>: integer type, sum of bearer service code.

- |    |                                                                                                                                               |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Voice (telephony)                                                                                                                             |
| 2  | Data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16,32,64 and 128) |
| 4  | Fax (facsimile services)                                                                                                                      |
| 8  | Short message service                                                                                                                         |
| 16 | Data circuit sync                                                                                                                             |

|     |                         |
|-----|-------------------------|
| 32  | Data circuit async      |
| 64  | Dedicated packet access |
| 128 | Dedicated PAD access    |
| 255 | All type                |

<number>: string type, forwarding phone number.

<type>: type of address octet in integer format; default 145 when dialing string includes international access code character “+”, otherwise 129

<subaddr>: string type subaddress of format specified by <satype>

<satype>: type of subaddress octet in integer format; default 128

<Time>: 1...30 when “no reply” is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value 20

<Status>:

|   |            |
|---|------------|
| 0 | Not active |
| 1 | Active     |

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

### (1) Query status

AT+CCFC=0,2

Query the status of unconditional forwarding

+CCFC: 0,255

Interrogated result: not active, voice

OK

### (2) Registration

Before enable, disable, and erasure, you should register the SS service.

AT+CCFC=0,3,"0123456789"

Register unconditional forwarding to “0123456789” and activated the service.

OK

It doesn't means that the SS service is registered successfully. You should query the status to confirm the result.

AT+CCFC=0,2

+CCFC: 1,1," 0123456789",129,,,

OK

(3) Deactivate

AT+CCFC=0,0

Disable unconditional forwarding.

OK

(4) Activate

AT+CCFC=0,1

Enable unconditional forwarding.

(5) Erasure

AT+CCFC=0,4

Erase registered unconditional forwarding data.

Note: After registering unconditional call forwarding, one can't register another reason's service.

### 2.1.3.11 Call waiting service +CCWA

Table: +CCWA parameter command syntax

| Command                           | Possible response(s)                                                                                                                  |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| +CCWA =[<n>[, <mode>[, <class>]]] | +CME ERROR: <err><br>When <mode> = 2 and command successful<br>+CCWA:<br><status>,<class1>[<CR><LF>+CCWA:<br><status>, <class2>[...]] |
| +CCWA?                            | +CCWA: <n>                                                                                                                            |
| +CCWA=?                           | +CCWA: (list of supported <n>s)                                                                                                       |

#### Description

This command allows control of the Call Waiting supplementary service. Activation, deactivation and status query are supported. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if services not active for any <class>. Parameter <n> is used to disable/enable the presentation of an unsolicited result code +CCWA: <number>, <type>, <class>,[<alpha>][,<CLI validity>] to the TE when call waiting service is enabled. Command should be abortable when network is interrogated.

## Defined values

<N>: integer type (sets/shows the unsolicited result code presentation status in the TA),

|   |         |
|---|---------|
| 0 | Disable |
| 1 | Enable  |

<Mode>: integer type, operation mode of

|   |              |
|---|--------------|
| 0 | Disable      |
| 1 | Enable       |
| 2 | Query status |

<Status>: integer type, CCWA status.

|   |            |
|---|------------|
| 0 | Not active |
| 1 | Active     |

<Class>: is a sum of integers each representing a class of information

|     |                                                                                                                                               |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Voice                                                                                                                                         |
| 2   | Data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16,32,64 and 128) |
| 4   | Fax (facsimile services)                                                                                                                      |
| 8   | Short message service                                                                                                                         |
| 16  | Data circuit sync                                                                                                                             |
| 32  | Data circuit async                                                                                                                            |
| 64  | Dedicated packet access                                                                                                                       |
| 128 | Dedicated PAD access                                                                                                                          |
| 255 | All type                                                                                                                                      |

<Number>: string type phone number of calling address in format specified by  
<type>

<Type>: type of address octet in integer format

<Alpha>:optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook.

<CLI validity>:

|   |                                                                                          |
|---|------------------------------------------------------------------------------------------|
| 0 | CLI valid                                                                                |
| 1 | CLI has been withheld by the originator.                                                 |
| 2 | CLI is not available due to interworking problems or limitations of originating network. |

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

### (1) ACTIVATION

AT+CCWA=0,1

OK

### (2) DEACTIVATION

AT+CCWA=0,0

OK

AT+CCWA=1

ATD0952123456;

OK

(Another call is coming)

+CCWA: , 161,1,,1

### (3) INTERROGATION

AT+CCWA=0,2

Case 1: if the call waiting is active, echo

+CCWA: 1,1

Case 2: if operation success and call waiting is not active, echo

+CCWA: 0,1

Case 3: if operation success and network not support, echo

ERROR

### 2.1.3.12 Short string procedure AT+CHLD

Table: +CHLD parameter command syntax

| Command      | Possible response(s)             |
|--------------|----------------------------------|
| +CHLD =[<n>] | +CME ERROR <err>                 |
| +CHLD=?      | [+CHLD: (list of supported <n>s) |

## Description

This command allows the control of the following call related services:

- a call can be temporarily disconnected from the ME but the connection is retained by the network;

- Multiparty conversation (conference calls);
- The served subscriber who has two calls (one held and the other either active or alerting) can connect the other parties and release the served subscriber's own connection.

Calls can be put on hold, recovered, released, added to conversation, and transferred similarly.

It is recommended (although optional) that test command returns a list of operations which are supported. The call number required by some operations shall be denoted by "x" (e.g. +CHLD: (0,1,1x,2,2x,3)).

## Defined values

### 1. AT+CHLD=0

Release all held calls or waiting calls.

### 2. AT+CHLD=1

Release all active calls and accept the other held or waiting calls.

### 3. AT+CHLD=1x

Release a specified active call x.

### 4. AT+CHLD=2

Place all active calls on hold and accept the other waiting or held calls.

### 5. AT+CHLD=2x

Place all active calls on hold except call x with which communication shall be supported.

### 6. AT+CHLD=3

Adds held calls to the conversation.

### 7. AT+CHLD=4

Connects the two calls and disconnects the subscriber from both calls.

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1)

;::::MO1<Test Module> makes a call to MT1

ATD0921214863;

OK

;::::MT1 accepts the call from MO1

AT+CHLD=2  
OK  
;;;;;MO2 makes a call to MO1  
;;;;;MO1 accepts the call from MO2  
Ring  
ATA  
AT+CHLD=1  
OK  
;;;;;MO1-MO2 breaks.

(2)

;;;;;MO1<Test Module> makes a call to MT1  
ATD0921214863;  
OK  
;;;;;MT1 accepts the call from MO1  
AT+CHLD=2  
OK  
;;;;;MO2 makes a call to MO1  
;;;;;MO1 accepts the call from MO2  
Ring  
ATA  
AT+CHLD=4  
OK  
;;;;;Both calls break.

### 2.1.3.13 Unstructured supplementary service data +CUSD

Table: +CUSD parameter command syntax

| Command                       | Possible response(s)            |
|-------------------------------|---------------------------------|
| +CUSD=[<n>[, <str>[, <dcs>]]] | +CME ERROR: <err>               |
| +CUSD?                        | +CUSD: <n>                      |
| +CUSD=?                       | +CUSD: (list of supported <n>s) |

#### Description

This command allows control of the Unstructured Supplementary Service Data (USSD). Both network and mobile initiated operations are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code (USSD response from the network, or network initiated operation)

+CUSD: <m>[, <str>, <dcs>] to the TE. In addition, value <n>=2 is used to cancel an ongoing USSD session.

When <str> is given, a mobile initiated USSD-string or a response USSD-string to a network initiated operation is sent to the network. The response USSD-string from the network is returned in a subsequent unsolicited +CUSD result code.

Test command returns values supported by the TA as a compound value.

### Defined values

<n>

|   |                                                          |
|---|----------------------------------------------------------|
| 0 | Disable the result code presentation in the TA           |
| 1 | Enable the result code presentation in the TA            |
| 2 | Cancel session (not applicable to read command response) |

<str>: string type USSD-string (when <str> parameter is not given, network is not interrogated).

<dcs>: Cell Broadcast Data Coding Scheme in integer format.

<M>

|   |                                  |
|---|----------------------------------|
| 0 | no further user action required  |
| 1 | further user action required.    |
| 2 | USSD terminated by network       |
| 3 | Other local client has responded |
| 4 | Operation not supported          |
| 5 | Network time out                 |

### Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CUSD=?

+CUSD: (0-2)

OK

AT+CUSD?

+CUSD: 0

OK

AT+CUSD=1

OK

(Far Eastone SIM)

AT+CUSD=1,"\*147#",15

OK

+CUSD: 0,"Accepte",0

#### 2.1.3.14 Advice of Charge +CAOC

**Table: +CAOC parameter command syntax**

| Command      | Possible response(s)                 |
|--------------|--------------------------------------|
| +CAOC=<mode> | [+CAOC: <ccm>]<br>+CME ERROR: <err>  |
| +CAOC?       | +CAOC: <mode>                        |
| +CAOC=?      | [+CAOC: (list of supported <mode>s)] |

#### Description

This refers to Advice of Charge supplementary service that enables subscriber to get information about the cost of calls. With <mode>=0, the execute command returns the current call meter value from the ME.

The command also includes the possibility to enable an unsolicited event reporting of the CCM information. The unsolicited result code +CCCM: <ccm> is sent when the CCM value changes, but not more than every 10 seconds. Deactivation of the unsolicited event reporting is made with the same command.

The Read command indicates whether the unsolicited reporting is activated or not. Read command is available when the unsolicited result code is supported.

#### Defined values

<Mode>

- |   |                                                   |
|---|---------------------------------------------------|
| 0 | Query CCM value                                   |
| 1 | Deactivate the unsolicited reporting of CCM value |
| 2 | Activate the unsolicited reporting of CCM value   |

<ccm>: string type; three bytes of the current call meter value in hexadecimal format.

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+CAOC  
OK

AT+CAOC=0  
+CAOC: "000000"  
OK

AT+CAOC?  
+CAOC: 1  
OK

AT+CAOC=?  
+CAOC: (0-2)  
OK

### 2.1.3.15 Supplementary service notifications +CSSN

Table: +CSSN parameter command syntax

| Command            | Possible response(s)                                      |
|--------------------|-----------------------------------------------------------|
| +CSSN=[<n>[, <m>]] |                                                           |
| +CSSN?             | +CSSN: <n>, <m>                                           |
| +CSSN=?            | +CSSN: (list of supported <n>s), (list of supported <m>s) |

### Description

This command refers to supplementary service related network initiated notifications. The set command enables/disables the presentation of notification result codes from TA to TE.

When  $<n>=1$  and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI:

<code1>[,<index>] is sent to TE before any other MO call setup result codes presented in the present document or in V.25ter. When several different <code1>s are received from the network, each of them shall have its own +CSSI result code.

When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received, unsolicited result code +CSSU: <code2>[,<index>[,<number>,<type>]]] is sent to TE. In case of MT call setup, result code is sent after every +CLIP result code (refer command "Calling line identification presentation +CLIP") and when several different <code2>s are received from the network, each of them shall have its own +CSSU result code.

Test command returns values supported by the TA as a compound value.

### Defined values

<N>(parameter sets/shows the +CSSI result code presentation status)

|   |         |
|---|---------|
| 0 | Disable |
| 1 | Enable  |

<M>(parameter sets/shows the +CSSU result code presentation status)

|   |         |
|---|---------|
| 0 | Disable |
| 1 | Enable  |

<Code1>

|   |                                                     |
|---|-----------------------------------------------------|
| 0 | Unconditional call forwarding is active             |
| 1 | Some of the conditional call forwardings are active |
| 2 | Call has been forwarded                             |
| 3 | Call is waiting                                     |
| 4 | This is a CUG call                                  |
| 5 | Outgoing calls are barred                           |
| 6 | Incoming calls are barred                           |
| 7 | CLIR suppression rejected                           |
| 8 | Call has been deflected                             |

<Index>: refer "Closed user group+CCUG"

<Code2>

|    |                                                                                                     |
|----|-----------------------------------------------------------------------------------------------------|
| 0  | This is a forwarded call                                                                            |
| 1  | This is a CUG call                                                                                  |
| 2  | Call has been put on hold                                                                           |
| 3  | Call has been retrieved                                                                             |
| 4  | Multiparty call entered                                                                             |
| 5  | Call on hold has been released                                                                      |
| 6  | Forward check SS message received                                                                   |
| 7  | Call is being connected with the remote party in alerting state in explicit call transfer operation |
| 8  | Call has been connected with the other remote party in explicit call transfer operation             |
| 9  | This is a deflected call                                                                            |
| 10 | Additional incoming call forwarded                                                                  |

<Number>: string type phone number

<Type>: type of address octet in integer format

<subaddr>: string type subaddress

<satype>: type of subaddress octet in integer format

### Informative example

-Initial the HyperTerminal

-Initial the MS

-AT Command

AT+CSSN=?

+CSSN: (0-1),(0-1)

OK

AT+CSSN?

+CSSN: 0,0

OK

AT+CSSN=1,1

OK

AT+CSSN?

+CSSN: 1,1

OK

```
AT+CSSN =1,1
OK
atd0937135753; // Call is waiting
OK
+CSSU: 3
OK
```

### 2.1.3.16 Preferred PLMN list +CPOL

Table: +CPOL parameter command syntax

| Command                             | Possible response(s)                                                                               |
|-------------------------------------|----------------------------------------------------------------------------------------------------|
| +CPOL=[<index>][,<format>[,<oper>]] | +CME ERROR: <err>                                                                                  |
| +CPOL?                              | +CPOL: <index1>,<format>,<oper1> [<CR><LF>+CPOL:<index2>,<format>,<oper2> [...]] +CME ERROR: <err> |
| +CPOL=?                             | +CPOL: (list of supported <index>s), (list of supported <format>s) +CME ERROR: <err>               |

#### Description

This command is used to edit the PLMN selector with Access Technology lists in the SIM card or active application in the UICC(GSM or USIM).

Execute command writes an entry in the SIM/USIM list of preferred PLMNs, previously selected by the command +CPLS. If no list has been previously selected, the User controlled PLMN selector with Access Technology, EF\_OPLMNWACT, is the one accessed by default. If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed. The Access Technology selection parameters, Read command returns all used entries from the SIM/USIM list of preferred PLMNs, previously selected by the command +CPLS, with the Access Technologies for each PLMN in the list.

Note: It is recommend to add a preferred PLMN with numeric format. There is an internal list which store all PLMN's long name, short name and numeric

name in the module. AT+COPN shows the list. The numeric information is the MCC and MNC of the PLMN. When using long/short format to add a preferred PLMN that does not exist in the internal list, the module will reject the command because the module is fail to get the MCC and MNC of the PLMN.

Test command returns the whole index range supported by the SIM.

### Defined values

<indexn>: integer type; the order number of operator in the SIM/USIM preferred operator list

<format>

|   |                                 |
|---|---------------------------------|
| 0 | Long format alphanumeric<oper>  |
| 1 | Short format alphanumeric<oper> |
| 2 | Numeric<oper>                   |

<opern>: string type; <format> indicates if the format is alphanumeric or numeric

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

```
AT+CPOL=?
+CPOL: (1-16),(0-2)
OK
```

```
AT+CPOL?
+CPOL: 1,2,"46601"
+CPOL: 2,2,"46688"
OK
```

```
AT+CPOL=2
OK
```

```
AT+CPOL?
+CPOL: 1,2,"46601"
OK
```

## 2.1.3.17 List current calls +CLCC

**Table: +CLCC parameter command syntax**

| Command | Possible response(s)                                                                        |
|---------|---------------------------------------------------------------------------------------------|
| +CLCC   | +CLCC: <id1>, <dir>, <state>, <mode>, <mpty>[, <number>, <type>[, <alpha>]]....<br>+CLCC: 0 |

### Description

Returns list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.

### Defined values

<Id>: call id which is a digit from 1 to 7

<Dir>: integer type

|   |                             |
|---|-----------------------------|
| 0 | Mobile originated (MO) call |
| 1 | Mobile terminated (MT) call |

<State>:(state of the call)

|   |                    |
|---|--------------------|
| 0 | Active             |
| 1 | Held               |
| 2 | Dialing (MO call)  |
| 3 | Alerting (MO call) |
| 4 | Incoming (Mt call) |
| 5 | Waiting (MT call)  |

<Mode>:(bearer/teleservice)

|   |                                    |
|---|------------------------------------|
| 0 | Voice                              |
| 1 | Data                               |
| 2 | Fax                                |
| 3 | Voice followed by data, voice mode |
| 4 | Alternating voice/data, voice mode |
| 5 | Alternating voice/fax, voice mode  |
| 6 | Voice followed by data, data mode  |
| 7 | Alternating voice/data, data mode  |
| 8 | Alternating voice/fax, fax mode    |
| 9 | Unknown                            |

<mpty>: integer type  
0 Call is not one of multiparty (conference) call parties  
1 Call is one of multiparty (conference) call parties  
<Number>: string type phone number  
<Type>: type of address octet in integer format  
<Alpha>: string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command +CSCS

### Informative example

- Initial the HyperTerminal
- Initial the MS
- AT Command

```
ATD0952123456;
OK
AT+CLCC
+CLCC: 1,0,3,0,0,"0932021260",129
```

### 2.1.3.18 Read operator names +COPN

Table: +COPN parameter command syntax

| Command | Possible response(s)                                                                              |
|---------|---------------------------------------------------------------------------------------------------|
| +COPN   | +COPN: <numeric1>,<br><alpha1>[<CR><LF>]+COPN: <numeric2>,<br><alpha2>[...]]<br>+CME ERROR: <err> |

### Description

Execute command returns the list of operator names from the ME. Each operator code<numericn> that has an alphanumeric equivalent <alphan> in the ME memory shall be returned.

### Defined values

<numericn>: string type; operator in numeric format(see +COPS)  
<alphan>: string type; operator in long alphanumeric format(see +COPS)

### Informative example

- Initial the HyperTerminal

- Initial the MS
- AT Command
  - AT+COPN
  - +COPN: "00131","Test Network"
  - +COPN: "546559","Test Net 222"
  - +COPN: "56231","A1"
  - +COPN: "56263","A max."
  - .....
  - OK

### 2.1.3.19 Time Zone Reporting + CTZR

Table : +CTZR parameter command syntax

| Command       | Possible response(s)                                     |
|---------------|----------------------------------------------------------|
| +CTZR=<onoff> | +CME ERROR: <err>                                        |
| +CTZR?        | +CTZR: <onoff><br>+CME ERROR: <err>                      |
| +CTZR=?       | +CTZR: (list of supported <onoff>s)<br>+CME ERROR: <err> |

#### Description

This set command enables and disables the time zone change event reporting. If the reporting is enabled the MT returns the unsolicited result code +CTZV: <tz> whenever the time zone is changed. If setting fails in an MT error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Read command returns the current reporting settings in the MT.

Test command returns supported <onoff>-values.

#### Defined values

<onoff>: integer type value indicating:

0 – disable time zone change event reporting (default).

1 – Enable time zone change event reporting.

## 2.1.4 Mobile control and status commands

### 2.1.4.1 Phone activity status +CPAS

Table: +CPAS parameter command syntax

| Command | Possible response(s)                                   |
|---------|--------------------------------------------------------|
| +CPAS   | +CPAS: <pas><br>+CME ERROR: <err>                      |
| +CPAS=? | +CPAS: (list of supported <pas>s)<br>+CME ERROR: <err> |

#### Description

Execution command returns the activity status <pas> of the ME. It can be used to interrogate the ME before requesting action from the phone.

#### Defined values

<pas>

- |   |                  |
|---|------------------|
| 0 | Ready            |
| 3 | Ringing          |
| 4 | Call in progress |

#### Informative example

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CPAS=?

+CPAS: (0,3,4)

OK

AT+CPAS

+CPAS: 0

OK

AT+CPAS

RING

+CLIP: "0934398899",128,,,0

+CPAS: 3

OK

## 2.1.4.2 Set phone functionality +CFUN

**Table: +CFUN parameter command syntax**

| Command               | Possible response(s)                                                              |
|-----------------------|-----------------------------------------------------------------------------------|
| +CFUN=[<fun>[,<rst>]] | +CME ERROR: <err>                                                                 |
| +CFUN?                | +CFUN: <fun><br>CME ERROR: <err>                                                  |
| +CFUN=?               | +CFUN: (list of supported <fun>s),(list of supported <rst>s)<br>+CME ERROR: <err> |

### Description

Set command selects the level of functionality <fun> in the ME. Level “full functionality” is where the highest level of power is drawn. “Minimum functionality” is where minimum power is drawn. Level of functionality between these may also be specified by manufacturers. When supported by manufacturer, ME resetting with <rst> parameter may be utilized.

### Defined values

<fun>

- 0 Minimum functionality
- 1 Full functionality
- 4 Disable phone both transmit and receive RF circuits
- 5 Factory Test Mode
- 6 Reset UE
- 7 Offline mode

<rst>

0: do not reset the ME before setting it to <fun> power level.

1: reset the MT before setting it to <fun> power level

### Informative examples

-Initial the HyperTerminal

-Initial the MS

-AT Command

AT+CFUN=?

+CFUN: (0-1,4-7),(0-1)

OK

AT+CFUN?

+CFUN: 0

OK

AT+CFUN=1

OK

AT+CFUN=4

OK

(SIM not inserted)

AT+CFUN?

+CFUN: 0

OK

AT+CFUN=1

ERROR

AT+CFUN?

+CFUN: 1

OK

#### 2.1.4.3 Enter PIN +CPIN

**Table: +CPIN parameter command syntax**

| Command                 | Possible response(s)               |
|-------------------------|------------------------------------|
| +CPIN=<pin>[, <newpin>] | +CME ERROR: <err>                  |
| +CPIN?                  | +CPIN: <code><br>+CME ERROR: <err> |

#### Description

Set command sends to the MS a password that is necessary before it can be operated only SIM PIN. If no PIN request is pending, no action is taken. If SIM is useless or SIM is not inserted, an error message +CME ERROR, is returned to the TE.

Read command returns an alphanumeric string indicating whether some password is required or not.

## Defined values

<pin>, <newpin>:string type values

<code>: values reserved by the present document

|          |                                                                                                                                                                                                                                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| READY    | ME is not pending for any password                                                                                                                                                                                                                                                                    |
| SIM PIN  | ME is waiting SIM PIN to be given                                                                                                                                                                                                                                                                     |
| SIM PIN2 | ME is waiting SIM PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that ME does not block it operation)               |
| SIM PUK  | ME is waiting SIM PUK to be given                                                                                                                                                                                                                                                                     |
| SIM PUK2 | ME is waiting SIM PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that ME does not block it operation) |

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Power on (1) (CHV1 is disabled, SIM is ready)

AT+CPIN?

+CPIN: READY

(2) Power on (1) (SIM not inserted)

AT+CMEE=2

OK

AT+CPIN?

+CME ERROR: SIM not inserted

### 2.1.4.4 Battery charge +CBC

Table: +CBC parameter command syntax

| Command | Possible response(s) |
|---------|----------------------|
| +CBC    | +CBC: <bcs>, <bcl>   |

|        |                                                              |
|--------|--------------------------------------------------------------|
|        | +CME ERROR: <err>                                            |
| +CBC=? | +CBC: (list of supported <bcs>s), (list of supported <bcl>s) |

### Description

Execution command returns battery connection status <bcs> and battery charge level <bcl> of the ME.

### Defined values

<bcs>

- 0 ME is powered by the battery
- 1 ME has a battery connected, but is not powered by it
- 2 ME does not have a battery connected
- 3 Recognized power fault, calls inhibited

<bcl>

- 0 Battery is exhausted, or ME does not have a battery connected
- 1...100 Battery has 1-100 percent of capacity remaining

### Informative example

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CBC=?

+CBC: (0-3),(0-100)

OK

### 2.1.4.5 Signal quality +CSQ

Table: +CSQ parameter command syntax

| Command | Possible response(s)                                          |
|---------|---------------------------------------------------------------|
| +CSQ    | +CSQ: <rssi>,<ber><br>+CME ERROR:<err>                        |
| +CSQ=?  | +CSQ: (list of supported <rssi>s), (list of supported <ber>s) |

### Description

1. Execution command returns received signal strength indication <rssi> and

channel bit error rate <ber> from the MS.

2. Test command returns values supported by the MS as compound values.

Only support continuous unsolicited response.

### Defined values

<rssi>:

|        |                             |
|--------|-----------------------------|
| 0      | -113dBm or less             |
| 1      | -111dBm                     |
| 2...30 | -109dBm ~ -53dBm            |
| 31     | -51dBm or greater           |
| 99     | Not known or not detectable |

<ber>:

|    |                           |
|----|---------------------------|
| 99 | Unknown or not detectable |
|----|---------------------------|

### Informative examples

-Initial the HyperTerminal

-Initial the MS

-AT Command

```
AT+CSQ=?
+CSQ: (2-31,99), (99)
OK
```

```
AT+CSQ
+CSQ: 31, 99
OK
```

### 2.1.4.6 Restricted SIM access +CRSM

Table: +CRSM action command syntax

| Command                                                          | Possible response(s)                                   |
|------------------------------------------------------------------|--------------------------------------------------------|
| +CRSM=<command> [, <fileid><br>[, <P1>, <P2>, <P3> [, <data>]]]] | +CRSM:<sw1>, <sw2> [, <response>]<br>+CME ERROR: <err> |
| +CRSM=?                                                          |                                                        |

### Description

By using this command instead of Generic SIM Access +CSIM TE application has easier but more limited access to the SIM database. Set command

transmits to the ME the SIM <command> and its required parameters. ME handles internally all SIM-ME interface locking and file selection routines. As response to the command, ME sends the actual SIM information parameters and response data. ME error result code +CME ERROR may be returned when the command cannot be passed to the SIM, but failure in the execution of the command in the SIM is reported in <sw1> and <sw2> parameters.

Coordination of command requests to SIM and the ones issued by GSM/UMTS application inside the ME is implementation dependent. However the TE should be aware of the precedence of the GSM/UMTS application commands to the TE commands.

### Defined values

<command> (command passed on by the ME to the SIM):

|     |               |
|-----|---------------|
| 176 | READ BINARY   |
| 178 | READ RECORD   |
| 192 | GET RESPONSE  |
| 214 | UPDATE BINARY |
| 220 | UPDATE RECORD |
| 242 | STATUS        |

all other values are reserved

NOTE 1: The ME internally executes all commands necessary for selecting the desired file, before performing the actual command.

<fileid>: integer type; this is the identifier of a elementary data file on SIM.  
Mandatory for every command except STATUS

NOTE 2: The range of valid file identifiers depends on the actual SIM and is defined in GSM 51.011 [28]. Optional files may not be present at all.

<P1>, <P2>, <P3>: integer type; parameters passed on by the ME to the SIM.  
These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in GSM 51.011 [28]

<data>: information which shall be written to the SIM (hexadecimal character

format; refer +CSCS)

<sw1>, <sw2>: integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command

<response>: response of a successful completion of the command previously issued (hexadecimal character format; refer +CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary datafield. This information includes the type of file and its size (refer GSM 51.011 [28]). After READ BINARY or READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY or UPDATE RECORD command

### Informative example

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+CRSM=192,12258,0,0,255

+CRSM: 103,15

OK

/\* Get SIM Card Identification number (ICCID) \*/

AT+CRSM=176,12258,0,0,10

+CRSM: 144,0,98889612040053576639

OK

And then the ICCID is 89886921400035756693.

#### 2.1.4.7 Accumulated call meter +CACM

Table: +CACM parameter command syntax

| Command           | Possible response(s)              |
|-------------------|-----------------------------------|
| +CACM =[<passed>] | +CME ERROR: <err>                 |
| +CACM?            | +CACM: <acm><br>+CME ERROR: <err> |

## Description

Set command resets the Advice of Charge related accumulated call meter value in SIM card or in the active application in the UICC file EF<sub>ACM</sub>. ACM contains the total number of home units for both the current and preceding calls.

## Defined values

<passwd> : string type; SIM PIN2  
<acm>: string type

## Informative example

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CACM?

+CACM: "000000"

OK

## 2.1.4.8 Accumulated call meter maximum +CAMM

Table: +CAMM parameter command syntax

| Command           | Possible response(s)              |
|-------------------|-----------------------------------|
| +CAMM =[<passed>] | +CME ERROR: <err>                 |
| +CAMM?            | +CAMM: <acm><br>+CME ERROR: <err> |

## Description

Set command sets the Advice of Charge related accumulated call meter maximum value in SIM card or in the active application in the UICC file EF<sub>ACMmax</sub>. ACMmax contains the maximum number oh home units allowed to be consumed by the subscriber.

## Defined values

<acmmmax>: string type  
<passed>: string type: SIM PIN2

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CAMM?

+CAMM: "000000"

OK

#### 2.1.4.9 Price per unit and currency table +CPUC

**Table: +CPUC parameter command syntax**

| Command                             | Possible response(s)                          |
|-------------------------------------|-----------------------------------------------|
| +CPUC=[<currency>,<ppu>[,<passed>]] | +CME ERROR: <err>                             |
| +CPUC?                              | +CPUC: <currency>, <ppu><br>+CME ERROR: <err> |

#### Description

Set command sets the parameters of Advice of Charge related price per unit and currency table in SIM card or in the active application in the UICC file EF<sub>PUCT</sub>.PUCT information can be used to convert the home units into currency units. SIM PIN2 is usually required to set the parameters.

#### Defined values

<currency>: string type; three character currency code; character set as specified by command select TE Character Set

<ppu>: string type: price per unit; dot is used as a decimal separator.

#### Informative example

-Initial the HyperTerminal

-Initial the MS

-AT Command

AT+CPUC?

+CPUC: "", ""

OK

AT+CPUC="NT","5.00"

OK

## 2.1.5 Commands related with phonebook service

### 2.1.5.1 Select phonebook memory storage +CPBS

Table: +CPBS parameter command syntax

| Command         | Possible response(s)                                   |
|-----------------|--------------------------------------------------------|
| +CPBS=<storage> | +CME ERROR: <err>                                      |
| +CPBS?          | +CPBS: <storage>[,<used>,<total>]<br>+CME ERROR: <err> |
| +CPBS=?         | +CPBS: (list of supported <storage>s)                  |

#### Description

1. Set command selects phonebook memory storage <storage> which is used by other phonebook commands. If settings fails in an MS error, +CME ERROR: <err> is returned.
2. Read command returns currently selected memory, this used entry numbers and the entire entry numbers in the selected storage.
3. Test command returns supported storages as compound value.

#### Defined values

<storage>:string type

|      |                                                                                |
|------|--------------------------------------------------------------------------------|
| “SM” | Abbreviated dialing numbers                                                    |
| “DC” | MT dialled calls list (+CPBW may not be applicable for this storage)           |
| “FD” | SIM fix dialing-phonebook                                                      |
| “MC” | Last missed number                                                             |
| “ME” | ME number                                                                      |
| “RC” | Last received numbers                                                          |
| “EN” | SIM/USIM (or ME) emergency number(+CPBW is not be applicable for this storage) |
| “ON” | Own number                                                                     |

<used>: the used entry numbers within the selected storage.

<total>: the all entry numbers within the selected storage.

#### Informative examples

- Initial the HyperTerminal
  - Initial the MS
  - AT Command
1. Set command  
AT+CPBS=”FD”,”XXXX” (XXXX->PIN 2 )

OK  
AT+CPBS?  
+CPBS: "FD",2,3

OK

1. Read command

AT+CBPS?  
+CPBS: "SM",17,100  
OK

2. Test command

AT+CPBS=?  
+CPBS: ("SM", "DC", "FD", "MC", "ME", "RC", "EN", "ON")

OK

### 2.1.5.2 Read phonebook entries +CPBR

Table: +CPBR parameter command syntax

| Command                   | Possible response(s)                                                                                                   |
|---------------------------|------------------------------------------------------------------------------------------------------------------------|
| +CPBR=<index1>[,<index2>] | [+CPBR:<br><index1>,<number>,<type>,<text>[[..]<CR><LF>+CPBR:<br><index2>,<number>,<type>,<text>]]<br>+CME ERROR:<err> |
| +CPBR=?                   | +CPBR: (list of supported <index>s),<br>[<nlength>], [<tlength>]<br>+CME ERROR:<err>                                   |

#### Description

1. Execution command returns phonebook entries in location number range <index1>..<index2> from the current phonebook memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned. Entry fields returned are location number <indexn>, phone number stored there <number>(of format <type>) and text <text> associated with the number. If all queried locations are empty (but available), no information text lines may be returned and +CME ERROR: <err> can be returned. If list setting fails in an ME

error, +CME ERROR: <err> is returned.

2. If it is possible to show Chinese name in phone book, character set (+CSCS) has better to set “UCS2” first.

## Defined values

<index1>,<index2>: integer type value in the range of location numbers of phonebook memory.

<number>: string type indicating the phone number of format <type>

<type>: integer value indicating type of address octet in integer format.

<text>: string type ;character set specified by command select TE character Set +CSCS

<nlength>: integer value indicating the maximum length of field <number>

<tlength>: integer value indicating the maximum length of field <text>

## Informative examples

-Initial the HyperTerminal

-Initial the MS

-AT Command

1. Read the phonebook from index1 to index2 and neglect the blank record.

AT+CPBS=“SM”

OK

AT+CPBR=1,5

+CPBR:1,”27998800”,129,”David”

+CPBR:3,”27998800”,129,”JENNY”

+CPBR:5,”27998800”,129,”Davis”

OK

2. Chinese name may appear in phone book (SM).

AT+CSCS=“UCS2”

OK

AT+CPBR=61,70

+CPBR: 61,"0920960846",129,"004D00410047"

+CPBR: 62,"0928844716",129,"54335FB7660E"

+CPBR: 63,"0928836001",129,"92809234"

+CPBR: 69,"01285295711130",129,"0041004C004C0045004E"

+CPBR: 70,"0935657249",129,"0053002D0042004C00410043004B"

OK

3. Read the phonebook of item index1

AT+CPBR=5

OK

### 2.1.5.3 Find phonebook entries +CPBF

**Table: +CPBF parameter command syntax**

| Command          | Possible response(s)                                         |
|------------------|--------------------------------------------------------------|
| +CPBF=<findtext> | [+CPBF:<index1>,<number>,<type>,<text>]<br>+CME ERROR: <err> |
| +CPBF=?          | +CPBF: [<nlength>],[<tlength>]<br>+CME ERROR:<err>           |

#### Description

1. Execution command returns the phonebook entries (from the current phonebook memory storage selected with +CPBS which alphanumeric fields starting with the giving string <findtext>. Entry fields returned are location number <indexn>, phone number stored there <number> (of format <type>) and text <text> associated with the number. If listing fails in an ME error, +CME ERROR: <err> is returned.
2. Test command returns the maximum lengths of <number> and <text> fields. In case of SIM storage, the lengths may not be available.
3. The AT+CPBF="" command can be used to display all phonebook entries sorted in alphabetical order.
4. This command is only available for the “SM” and “ME” phonebook.
5. It is possible to use this command with UCS2 strings. If a wrong UCS2 format is entered, the string is considered as an ASCII string.

#### Defined values

<index1>: integer type value in the range of location numbers of phonebook memory.

<number>: string type indicating the phone number of format <type>

<type>: integer value indicating type of address octet in integer format.

<text>,<findtext>: string type ;character set specified by command select TE character Set +CSCS

<nlength>: integer value indicating the maximum length of field <number>

<tlength>: integer value indicating the maximum length of field <text>

## Informative examples

```
-Initial the HyperTerminal
-Initial the MS
-AT Command
AT+CPBS="SM"
OK
;;; List all phonebook entries start with "DA"
AT+CPBF="DA"
+CPBF: 1,"27998800",129,"DAVID"
+CPBF: 5,"123456",129,"dad"
+CPBF: 8,"222222",129,"Davis"
+CPBF: 10,"99999",129,"dAllen"
OK
```

### 2.1.5.4 Write phonebook entry +CPBW

Table: +CPBW parameter command syntax

| Command                                      | Possible response(s)                                                                                        |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| +CPBW=[<index>][,<number>[,<type>[,<text>]]] | +CME ERROR:<err>                                                                                            |
| +CPBW=?                                      | +CPBW: (list of supported <index>s),[<nlength>],(list of supported <type>s),[<tlength><br>+CME ERROR: <err> |

#### Description

1. Set command writes phonebook entry in location number <index> of phonebook memory <storage> excluding "DC", "LD", "MC" and "RC". Entry fields written are phone number <number> (in the format <type>) and text <text> associated with the number. If <index> is left out, but <number> is given, entry is written to the first free location in the phonebook (the implementation of this feature is manufacturer specific.) If the fields except for <index> are omitted, phonebook storage entry will be deleted. If writing fails in an ME error, +CME ERROR:<err> is returned.

#### Defined values

<index>: integer type values in the range of location numbers of phonebook memory

<number>:string type; phone number  
<type>: type of address octet in integer format  
<text>,<findtext>: string type ;character set specified by command select TE  
character Set +CSCS  
<nlength>: integer value indicating the maximum length of field <number>  
<tlength>: integer value indicating the maximum length of field <text>

## Informative examples

-Initial the HyperTerminal

-Initial the MS

-AT Command

1. AND, given <index>

(\*PC will check if FDN is disabled in advance)

AT+CSCS?

+CSCS: "IRA"

AT+CPBW=1,"27998800", 129,"DAVID"

OK

2. AND but <index> is left out

(\*PC will check if FDN is disabled in advance)

AT+CPBW=,"27998800", 129,"DAVID"

OK

3. Deleting entry

AT+CPBW=1

OK

## 2.1.6 Commands from TIA IS-101

### 2.1.6.1 Select mode +FCLASS

Table: +FCLASS parameter command syntax

| Command     | Return                   |
|-------------|--------------------------|
| +FCLASS=<n> |                          |
| +FCLASS?    | <n>                      |
| +FCLASS=?   | (list of supported <n>s) |

## Description

This command puts the TA into a particular mode of operation (data, fax, voice etc.). This causes the TA to process information in a manner suitable for that type of information (rather than for other types of information).

## Defined values

The values and meanings of parameter <n> are specified in the following table.

<n> Mode

- 0 data
- 1 fax class 2 (ITU-T T.32 [12] and TIA-592)

Voice mode is of particular interest here, and has an additional result code +VCON. Specifically, +VCON indicates that the TA is entering the voice command mode and there is a voice connection to at least one audio input or output. This presupposes that some mechanism has previously initiated a connection to that audio I/O.

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

```
AT+FCLASS=?
+FCLASS: (0-1)
OK
```

```
AT+FCLASS?
0
OK
```

```
AT+FCLASS=1
OK
```

```
AT+FCLASS?
1
OK
```

## 2.2 Commands specified by ITU-T Rec. V25ter as by GSM

### Rec. 07.07

#### 2.2.1 Generic TA control commands

##### 2.2.1.1 Repeating a command line (A/)

###### Description

If the prefix "A/" or "a/" is received (IA5 4/1, 2/15 or 6/1, 2/15), the DCE shall immediately execute once again the body of the preceding command line. No editing is possible, and no termination character is necessary. A command line may be repeated multiple times through this mechanism, if desired.

Responses to the repeated command line shall be issued using the parity and format of the original command line, and the rate of the "A/". If "A/" is received before any command line has been executed, the preceding command line is assumed to have been empty (that results in an OK result code).

###### Information examples

##### 2.2.1.2 Reset to default configuration (Z)

Table: Syntax (Z)

| Command | Possible response(s) |
|---------|----------------------|
| Z       |                      |

###### Description

This command instructs the DCE to set all parameters to their factory defaults as specified by the manufacturer. This may include taking into consideration the settings of hardware configuration switches or non-volatile parameter storage (if implemented). If the DCE is connected to the line, it is disconnected from the line, terminating any call in progress.

All of the functions of the command shall be completed before the DCE issues the result code. The DTE should not include additional commands on the same command line after the Z command because such commands may be ignored.

**NOTE** – Because this command may take into consideration the settings of switches and non-volatile parameter storage, it does not necessarily return the DCE to a "known state". In particular, the DCE may, as a result of execution of

this command, be placed in a state in which it appears to not respond to DTE commands, or respond in a completely different format than was being used prior to execution of the command.

### Result codes

- OK      If<value> is recognized.  
ERROR    If<value> is not recognized or supported.

An OK result code for this command is issued using the same rate, parity, and format as the DTE command line containing the command, but using the new values for parameters that affect the format of result codes (e.g. Q, V, S3, S4).

### Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

ATZ

OK

ATZ0

OK

### 2.2.1.3 Set to factory-defined configuration (&F)

**Table: Syntax (&F)**

| Command       | Possible response(s) |
|---------------|----------------------|
| <b>&amp;F</b> |                      |

### Description

This command instructs the DCE to set all parameters to default values specified by the manufacturer, which may take into consideration hardware configuration switches and other manufacturer-defined criteria.

### Defined values

- 0      set parameters to factory defaults.  
(other)    Reserved for manufacturer proprietary use.

### Result codes

- OK      if value is valid.

ERROR if value is not recognized or not supported.

An OK result code for this command is issued using the same rate, parity, and format as the DTE command line containing the command, but using the factory-defined values for other parameters that affect the format of result codes (e.g. Q, V, S3, S4) and dependent upon other commands that may follow on the same command line.

### Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT&F

OK

AT&F0

OK

AT&F1

ERROR

AT&F2

EXT: I

ERROR

#### 2.2.1.4 Request identification information (I)

Table: Syntax (I)

| Command | Possible response(s) |
|---------|----------------------|
| I       |                      |

### Description

This command causes the DCE to transmit one or more lines of information text, determined by the manufacturer, followed by a final result code. <value> may optionally be used to select from among multiple types of identifying information, specified by the manufacturer.

**NOTE** – The responses to this command may not be reliably used to determine the DCE manufacturer, revision level, feature set, or other information, and should not be relied upon for software operation. In particular, expecting a specific numeric response to an I0 command to indicate which

other features and commands are implemented in a DCE dooms software to certain failure, since there are widespread differences in manufacturer implementation among devices that may, coincidentally, respond with identical values to this command. Software implementers should use I commands with extreme caution, since the amount of data returned by particular implementations may vary widely from a few bytes to several thousand bytes or more, and should be prepared to encounter ERROR responses if the value is not recognized.

### Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

(1)ATI

```
<manufacturer1>
OK
```

(2)ATI0

```
<manufacturer1>
OK
```

(3)ATI1

```
<manufacturer2>
OK
```

(4)ATI2

ERROR

#### 2.2.1.5 Request manufacturer identification (+GMI)

Table: Syntax (+GMI)

Command	Possible response(s)
+GMI	

### Description

This command causes the DCE to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the DCE to identify the manufacturer. Typically, the text will consist of a single

line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired (e.g. address, telephone number for customer service, etc.).

The total number of characters. Including line terminators, in the information text returned in response to this command shall not exceed 2048 characters. Note that the information text shall not contain the sequence “0 <CR>” (3/0,0/13) or “OK<CR>” (4/15,4/11,0/13), so that DTE can avoid false detection of the this information text.

### **Result codes**

OK        In all cases.

### **Informative Examples**

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+GMI=?

OK

AT+GMI?

ERROR

AT+GMI

<manufacturer>

OK

### **2.2.1.6 Request model identification (+GMM)**

**Table: Syntax (+GMM)**

Command	Possible response(s)
+GMM	

### **Description**

This command causes the DCE to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the DCE to identify the specific model of device. Typically, the text will consist of a single line containing the name of the product, but manufacturers may choose to provide any information desired.

The total number of characters, including line terminators, in the information text returned in response to this command shall not exceed 2048 characters.  
Note that the information text shall not contain the sequence “0 <CR>”  
(3/0,0/13)or “OK<CR>” (4/15,4/11,0/13), so that DTE can avoid false detection of the this information text.

### Result codes

OK        in all cases

### Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+GMM

<model>

OK

### 2.2.1.7 Request revision identification (+GMR)

Table: Syntax (+GMR)

Command	Possible response(s)
+GMR	

### Description

This command causes the DCE to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the DCE to identify the version, revision level or date, or other pertinent information of the device. Typically, the text will consist of a single line containing the version of the product, but manufacturers may choose to provide any information desired.

The total number of characters, including line terminators, in the information text returned in response to this command shall not exceed 2048 characters.  
Note that the information text shall not contain the sequence “0 <CR>”  
(3/0,0/13)or “OK<CR>” (4/15,4/11,0/13), so that DTE can avoid false detection of the this information text.

## Result codes

OK in all cases

## Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+GMR

QisdaSWVer:H18\_UNSIGNED\_SW0.01,Build Info: M6260-KPRBL-1540,Boot

Block ver: 1, Build Data: Dec 04 2009, Build Time: 10:49:56

OK

### 2.2.1.8 Request product serial number identification (+GSN)

Table: Syntax (+GSN)

Command	Possible response(s)
+GSN	

## Description

This command causes the DCE to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the DCE to identify the individual device. Typically, the text will consist of a single line containing a manufacturer determined alpha-numeric string, but manufacturers may choose to provide any information desired.

The total number of characters, including line terminators, in the information text returned in response to this command shall not exceed 2048 characters.

Note that the information text shall not contain the sequence “0 <CR>” (3/0,0/13) or “OK<CR>” (4/15,4/11,0/13), so that DTE can avoid false detection of the this information text.

## Result codes

OK in all cases

## Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+GSN  
 <serial number>  
 OK

### 2.2.1.9 Request complete capabilities list (+GCAP)

**Table: Syntax (+GCAP)**

Command	Possible response(s)
<b>+GCAP</b>	

#### Description

This extended-format command causes the DCE to transmit one or more lines of information text in a specific format. The content is a list additional capabilities command +<name>s, which is intended to permit the user of the DCE to identify the overall capabilities of the DCE.

In particular, if the DCE implements a particular DCE control standard that uses Extended Syntax Commands, and if that DCE control standard includes command(s) that indicate general capabilities, the +<name>(s) of those commands shall be reported to the DCE in response to a +GCAP command. See table.

**Table V.25ter-Examples of required +GCAP responses**

+GCAP response	DCE control standard	Description
+FCLASS	T.class1, +F Or T.class2, +F	Class1 Facsimile DCE Control Class2 Facsimile DCE Control
+MS	+M commands	Modulation Control: +MS and +MR commands
+MV18S	+MV18 commands	V.18 Modulation Control: +MV18S and +MV18R
+ES	+E commands	Error Control: +ES, +EB, +ER, +EFCS, +ETBM
+DS	+D commands	Data Compression: +DS and +DR

For example, a data modem that supported all capabilities described in this Recommendation may report:

+GCAP: +MS, +ES, +DS, +MV18S

If that example DCE implemented other commands, they shall also be included. If that DCE implemented stubs (e.g. +FCLASS=0 only), it may report +FCLASS as part of its +GCAP response.

The response is not specifically limited as to number of lines of text. Note that the information text shall not contain the sequence “0 <CR>” (3/0,0/13) or “OK<CR>” (4/15,4/11,0/13), so that DTE can avoid false detection of the end of the this information text.

It is not necessary for a DTE to inquire of the +GCAP where the application is specific to a technology, such as facsimile where the +FCLASS command would be sufficient to determine capabilities.

### **Informative Examples**

- Initial the HyperTerminal
- Initial the MS
- AT Command
  - AT+GCAP
  - +GCAP:+FCLASS
  - OK

#### **2.2.1.10 Command line termination character (S3)**

**Table: Syntax (S3)**

Command	Possible response(s)
S3	

### **Description**

This S-parameter represents the decimal IA5 value of the character recognized by the DCE from the DTE to terminate an incoming command line. It is also generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S4 parameter (see the description of the V parameter for usage).

The previous value of S3 is used to determine the command line termination

character for entry of the command line containing the S3 setting command. However, the result code issued shall use the value of S3 as set during the processing of the command line. For example, if S3 was previously set to 13 and the command line “ATS3=30” is issued, the command line shall be terminated with a CR character (IA5 0/13), but the result code issued will use the character with the ordinal value 30 (IA5 2/14) in place of the CR.

### Defined values

- 0 to 127      Set command line termination character to this value. Mandatory default setting
- 13              Carriage return character (CR, IA5 0/13).

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command
  - ATS3=?
  - S3(0-127)
  - OK
  - ATS3?
  - 013
  - OK

### 2.2.1.11 Response formatting character (S4)

Table: Syntax (S4)

Command	Possible response(s)
S4	

### Description

This S-parameter represents the decimal IA5 value of the character generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter (see the description of the V parameter for usage).

If the value of S4 is changed in a command line, the result code issued in response to that command line will use the new value of S4.

## Defined values

**0 to 127** Set response formatting character to this value.

## Recommended default setting

**10** Line feed character (LF, IA5 0/10).

## Information examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

ATS4=?

S4(0-127)

OK

ATS4?

010

OK

## 2.2.1.12 Command line editing character (S5)

**Table: Syntax (S5)**

Command	Possible response(s)
<b>S5</b>	

## Description

This S-parameter represents the decimal IA5 value of the character recognized by the DCE as a request to delete from the command line the immediately preceding character (see 5.2.2).

## Defined values

**0 to 127** Set command line editing character to this value.

## Recommended default setting

**8** Backspace character (BS, IA5 0/8).

## Information examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

ATS5=?

S5(0-127)

OK

ATS5?

008

OK

### 2.2.1.13 Command echo (E)

**Table: Syntax (E)**

Command	Possible response(s)
E[ value ]	

#### Description

The setting of this parameter determines whether or not the DCE echoes characters received from the DTE during command state and online command state.

#### Defined values

- 0 DCE does not echo characters during command state and online command state.
- 1 DCE echoes characters during command state and online command state.

#### Recommended default setting

- 1 DCE echoes characters during command state and online command state.

#### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

ATE1

OK

<Display the response on the HyperTerminal>

ATE0

OK

[ command ]

OK

## 2.2.1.14 Result code suppression (Q)

**Table: Syntax (Q)**

Command	Possible response(s)
Q[ value ]	

### Description

The setting of this parameter determines whether or not the DCE transmits result codes to the DTE. When result codes are being suppressed, no portion of any intermediate, final, or unsolicited result code – header, result text, line terminator, or trailer – is transmitted. Information text transmitted in response to commands is not affected by the setting of this parameter.

### Defined values

- 0 DCE transmits result codes.
- 1 Result codes are suppressed and not transmitted.

### Recommended default setting

- 0 DCE transmits result codes.

### Result codes

- OK If value is 0.
- (none) If value is 1 (because result codes are suppressed).
- ERROR For unsupported values (if previous value was Q0).
- (none) For unsupported values (if previous value was Q1)

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

ATQ0

OK

ATQ?

Q: 0

OK

ATQ1

ATQ?

Q: 1

[none]

AT+CFUN?  
+CFUN: 1  
[none]

## 2.2.1.15 DCE response format (V)

**Table: Syntax (V)**

Command	Possible response(s)
V[ value ]	

### Description

The setting of this parameter determines the contents of the header and trailer transmitted with result codes and information responses. It also determines whether result codes are transmitted in a numeric form or an alphabetic (or "verbose") form. The text portion of information responses is not affected by this setting.

Table 3 shows the effect of the setting of this parameter on the format of information text and result codes. All references to `cr` mean "the character with the ordinal value specified in parameter S3"; all references to `lf` likewise mean "the character with the ordinal value specified in parameter S4". See Table 3.

**Table 3/V.25 ter – Effect of V parameter on response formats**

	V0	V1
Information responses	<code>&lt;text&gt;&lt;cr&gt;&lt;lf&gt;</code>	<code>&lt;cr&gt;&lt;lf&gt;</code> <code>&lt;text&gt;&lt;cr&gt;&lt;lf&gt;</code>
Result codes	<code>&lt;numeric code&gt;&lt;cr&gt;</code>	<code>&lt;cr&gt;&lt;lf&gt;</code> <code>&lt;verbose code&gt;&lt;cr&gt;&lt;lf&gt;</code>

### Defined values

- 0 DCE transmits limited headers and trailers and numeric text.
- 1 DCE transmits full headers and trailers and verbose response text.

### Recommended default setting

- 1 DCE transmits full headers and trailers and verbose response text.

## Result codes

<b>0</b>	If value is 0 (because numeric response text is being used).
<b>OK</b>	If value is 1.
<b>4</b>	For unsupported values (if previous value was V0).
<b>ERROR</b>	For unsupported values (if previous value was V1).

## Information examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1)AT+CFUN? -> +CFUN: 1

0

ATV? -> V: 0

0

(2)ATV?

V: 1

OK

AT+CFUN?

+CFUN: 1

OK

### 2.2.1.16 Result code selection and call progress monitoring control (X)

Table: Syntax (X)

Command	Possible response(s)
X[ value ]	

## Description

The setting of this parameter determines whether or not the DCE transmits particular result codes to the DTE. It also controls whether or not the DCE verifies the presence of dial tone when it first goes off-hook to begin dialling, and whether or not engaged tone (busy signal) detection is enabled. However, this setting has no effect on the operation of the W dial modifier, which always checks for dial tone regardless of this setting, nor on the busy signal detection capability of the W and @ dial modifiers. See Table 4.

**Table 4/V.25 ter – Defined values for X parameter**

X value	Description
0	<b>CONNECT</b> result code is given upon entering online data state. Dial tone and busy detection are disabled.
1	<b>CONNECT &lt;text&gt;</b> result code is given upon entering online data state. Dial tone and busy detection are disabled.
2	<b>CONNECT &lt;text&gt;</b> result code is given upon entering online data state. Dial tone detection is enabled, and busy detection is disabled.
3	<b>CONNECT &lt;text&gt;</b> result code is given upon entering online data state. Dial tone detection is disabled, and busy detection is enabled.
4	<b>CONNECT &lt;text&gt;</b> result code is given upon entering online data state. Dial tone and busy detection are both enabled.

### Information examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1)ATX0

OK

(2)ATX1

OK

(3)ATX2

OK

(4)ATX3

OK

(5)ATX4

OK

## 2.2.1.17 Circuit 109 (Received line signal detector) behavior (&C)

**Table: Syntax (&C)**

Command	Possible response(s)
<b>&amp;C[ value ]</b>	

### Description

This parameter determines how the state of circuit 109 relates to the detection of received line signal from the distant end. Changing the parameter will take effect immediately in both the command and online command states.

In &C1 mode of operation, circuit 109 is not turned off until all data previously received from the remote DCE is delivered to the local DTE. However, such buffered data shall be discarded and circuit 109 turned off if the DTE turns off circuit 108 (if &D1 or &D2 is set).

### Defined values

- 0 The DCE always presents the ON condition on circuit 109.
- 1 Circuit 109 changes in accordance with the underlying DCE, which may include functions other than the physical layer functions (e.g. Recommendations V.42, V.110, V.120 and V.13).

### Recommended default setting

- 1 Circuit 109 changes in accordance with the underlying DCE, which may include functions other than the physical layer functions (e.g. Recommendations V.42, V.110, V.120 and V.13).

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command
  - AT&C1
  - OK
  - AT&C0
  - OK

## 2.2.1.18 Circuit 108 (Data terminal ready) behavior (&D)

**Table: Syntax (&D)**

Command	Possible response(s)
<b>&amp;D[ value ]</b>	

### Description

This parameter determines how the DCE responds when circuit 108/2 is changed from the ON to the OFF condition during online data state.

### Defined values

- 0 DCE ignores circuit 108/2.
- 1 Upon an on-to-off transition of circuit 108/2, the DCE enters online command state and issues an OK result code; the call remains connected.
- 2 Upon an on-to-off transition of circuit 108/2, the DCE instructs the underlying DCE to perform an orderly cleardown of the call. The disposition of any data in the DCE pending transmission to the remote DCE is controlled by the ETBM parameter (see 6.5.6) if implemented; otherwise, this data is sent before the call is cleared, unless the remote DCE clears the call first (in which case pending data is discarded). The DCE disconnects from the line. Automatic answer is disabled while circuit 108/2 remains off.

### Information examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT&D?

&D: 0

OK

AT&D1

OK

AT&D?

&D: 1

OK

### 2.2.1.19 Fixed DTE rate (+IPR)

**Table: Syntax (+IPR)**

Command	Possible response(s)
IPR rate	
+IPR?	Read syntax
IPR: rate	Read syntax
IPR ?	Test syntax
IPR:(list of supported autodetectable rate values)[,(list of fixed-only rate values)]	Test syntax

#### Description

This numeric extended-format parameter specifies the data rate at which the DCE will accept commands, in addition to 1200 bit/s or 9600 bit/s (as required in 4.3). It may be used to select operation at rates at which the DCE is not capable of automatically detecting the data rate being used by the DTE.

Specifying a value of 0 disables the function and allows operation only at rates automatically detectable by the DCE. The specified rate takes effect following the issuance of any result code(s) associated with the current command line.

The rate specified does not apply in OnLine Data State if Direct mode of operation is selected.

#### Defined values

The rate value specified shall be the rate in bits per second at which the DTE-DCE interface should operate, e.g. "19 200" or "115 200". The rates supported by a particular DCE are manufacturer-specific; however, the IPR parameter should permit the setting of any rate supported by the DCE during online operation. Rates which include a non-integral number of bits per second should be truncated to the next lower integer (e.g. 134.5 bit/s should be specified as 134; 45.45 bit/s should be specified as 45). If unspecified or set to 0, automatic detection is selected for the range determined by 4.3 and the DCE manufacturer, and the character format is also forced to autodetect, ICF = 0 (see 6.2.11).

## Recommended default setting

It is recommended that the default for this parameter be the automatic detection setting (0), which facilitates initial DTE-DCE communications.

## Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+IPR=?

+IPR: (),(300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400)

OK

AT+IPR?

+IPR: 115200

OK

## 2.2.1.20 DTE-DCE character framing (+ICF)

Table: Syntax (+ICF)

Command	Possible response(s)
<b>ICF=[ format [, parity ]]</b>	
<b>ICF?</b>	
<b>ICF: format , parity</b>	
<b>ICF ?</b>	
<b>ICF:(list of supported format values),(list of supported parity values)</b>	

## Description

This extended-format compound parameter is used to determine the local serial port start-stop (asynchronous) character framing that the DCE shall use while accepting DTE commands and while transmitting information text and result code, if this is not automatically determined; IPR 0 forces ICF 0 (see IPR, 6.2.10). Note that the definition of fixed character format for OnLine Data State is for further study.

**format** determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame.

**parity** determines how the parity bit is generated and checked, if present.

**Defined values** See Table 5.

**Table 5/V.25 ter – Character format values**

format	Valid numeric values
3	8 Data 1 Stop
parity	Defined numeric values
0	Odd
1	Even
2	Mark
3	Space

### **Recommended default setting**

For format : 3

For parity : 3

### **Information examples**

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+ICF=?

+ICF: (3),(0-3)

OK

AT+ICF?

+ICF: 3,3

OK

AT+ICF=1

ERROR

## 2.2.1.21 DTE-DCE local flow control (+IFC)

**Table: Syntax (+IFC)**

Command	Possible response(s)
IFC [ DCE_by_DTE [, DTE_by_DCE ]]	
IFC?	Read syntax
IFC: DCE_by_DTE , DT E_by_DCE	Read Syntax
IFC ?	Test syntax
IFC:(list of supported DCE_by_DTE values),(list of supported DTE_by_DCE values)	Test syntax

### Description

This extended-format compound parameter is used to control the operation of local flow control between the DTE and DCE during the data state when V.42 error control is being used, or when fallback to non-error control mode is specified to include buffering and flow control. It accepts two numeric subparameters:

- **DCE\_by\_DTE**, which specifies the method to be used by the DTE to control the flow of received data from the DCE; and
- **DTE\_by\_DCE**, which specifies the method to be used by the DCE to control the flow of transmitted data from the DTE.

### Defined values

See Table 6.

**Table 6/V.25 ter – DCE\_by\_DTE and DTE\_by\_DCE values**

DCE_by_DT E	Description
0	None
1	DC1/DC3 on circuit 103; do not pass DC1/DC3 characters to the remote DCE
2	Circuit 133 (Ready for Receiving)

3	DC1/DC3 on circuit 103 with DC1/DC3 characters being passed through to the remote DCE in addition to being acted upon for local flow control
4 to 127	Reserved for future standardization
Other	Reserved for manufacturer-specific use
DTE_by_DCE	Description
0	None
1	DC1/DC3 on circuit 104
2	Circuit 106 (Clear to Send/Ready for Sending)
3 to 127	Reserved for future standardization
Other	Reserved for manufacturer-specific use
NOTE – DC1 is IA5 1/1; DC3 is IA5 1/3.	

### Recommended default setting

For DCE\_by\_DTE : **2**  
For DTE\_by\_DCE : **2**

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+IFC=?  
+IFC: (0-3),(0-2)  
OK

AT+IFC?  
+IFC: 2,2  
OK  
AT+IFC=0,0  
OK  
AT+IFC?  
+IFC: 0,0  
OK

## 2.2.2 Call Control commands and response

### 2.2.2.1 Dial (D)

**Table: Syntax (D)**

Command	Possible response(s)
D[<dial_string>][;]	

#### Description

This command instructs the DCE to originate a call. This may include several steps, depending upon the DCE type, such as: connecting to the line (going off-hook), waiting for the network to indicate readiness to receive call addressing information (wait for dial tone), signaling call addressing information to the network (dialling the number), monitoring the line for call progress signals (e.g. busy), and instructing the underlying DCE to start the call origination procedure (modulation handshaking).

All characters appearing on the same command line after the "D" are considered part of the call addressing information to be signaled to the network, or modifiers used to control the signaling process (collectively known as a "dial string"), up to a semicolon character (IA5 3/11) or the end of the command line. If the dial string is terminated by a semicolon, the DCE does not start the call origination procedure as defined for the underlying DCE, but instead returns to command state after completion of the signaling of call addressing information to the network.

Any characters appearing in the dial string that the DCE does not recognize as a valid part of the call addressing information or as a valid modifier shall be ignored. This permits characters such as parentheses and hyphens to be included that are typically used in formatting of telephone numbers.

#### Abortability

The D command may be aborted in the manner described in 5.6.1. If the DCE is connected to the line, it disconnects from the line in an orderly manner as required by the state of the connection. Aborting the connection by reception of a character is generally possible at any time before the DCE enters online data state, but may not be possible during some states of connection establishment such as handshaking. The DCE shall issue a final result code; which result code to issue shall be determined by the manufacturer, and may depend upon the state of the connection at the time the character was received from the

DTE. If a CONNECT or CONNECT text result code is received by the DTE, this indicates that the attempt to abort the command was not successful, possibly due to the state of connection establishment at the time the character was sent. See Table 8.

**Table 8/V.25 ter – D command result codes**

Alphabetic (ATV1)	Numeric (ATV0)	Description
CONNECT	1	If connection is successfully established and X0 is selected. This result code is transmitted immediately before circuit 109 is turned on
CONNECT <text>	–	If connection is successfully established and Xn is selected where "n" is any value other than 0. This result code is transmitted immediately before circuit 109 is turned on. The contents of text are manufacturer-specific, and may include indication of DTE interface speed, line speed, error control and data compression techniques in use, and other information
NO CARRIER	3	If a connection cannot be established, or was aborted by reception of an additional character from the DTE
ERROR	4	If issued while in online command state
BUSY	7	If busy signal detection is enabled or the W or @ dial modifier is used, and a busy signal is detected
NO ANSWER	8	If the "@" dial modifier is used, and remote ringing followed by five seconds of silence is not detected before the expiration of the connection timer defined by S7
NO DIALTONE	6	If dial tone detection is enabled or the W dial modifier is used, and no dial tone is detected within the associated timeout period

Alphabetic (ATV1)	Numeric (ATV0)	Description
OK	0	If command is aborted by either reception of an additional character from the DTE or by the DTE turning off circuit 108 (if &D1 or &D2 is selected; see 6.2.9), or if the dial string is terminated by a semicolon character

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

ATD0921214863;

OK

NO CARRIER

OK

### 2.2.2.2 Select tone dialing (dial modifier) (T)

**Table: Syntax (T)**

Command	Possible response(s)

### Description

Causes subsequent dial digits to be signalled using DTMF. The effect of the T modifier may carry forward to subsequent D commands (i.e. once a T dial modifier is used, all subsequent dialling uses DTMF tones until a P dial modifier or command is issued); however, it is recommended that the DTE explicitly specify pulse or DTMF dialling with the appropriate dial modifier (P or T) at the beginning of each dial string.

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

ATT

OK

### 2.2.2.3 Select pulse dialing (dial modifier) (P)

**Table: Syntax (P)**

Command	Possible response(s)
P	

#### Description

Causes subsequent dial digits to be signalled using pulse dialling. The effect of the P modifier may carry forward to subsequent D commands (i.e. once a P dial modifier is used, all subsequent dialling uses pulse dialling until a T dial modifier or command is issued); however, it is recommended that the DTE explicitly specify pulse or DTMF dialling with the appropriate dial modifier (P or T) at the beginning of each dial string.

#### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command
  - ATP
  - OK

### 2.2.2.4 Answer (A)

**Table: Syntax (A)**

Command	Possible response(s)
A	

#### Description

This command instructs the DCE to immediately connect to the line and start the answer sequence as specified for the underlying DCE.

Any additional commands that appear after A on the same command line are ignored.

#### Abortability

The A command may be aborted in the manner described in 5.6.1. If the DCE is connected to the line, it disconnects from the line in an orderly manner as required by the state of the connection. Aborting the connection by reception of a character is generally possible at any time before the DCE enters online data

state, but may not be possible during some states of connection establishment, such as handshaking. The DCE shall issue a final result code; which result code to issue shall be determined by the manufacturer, and may depend upon the state of the connection at the time the character was received from the DTE. If a CONNECT or CONNECT text result code is received by the DTE, this indicates that the attempt to abort the command was not successful, possibly due to the state of connection establishment at the time the character was sent. See Table 9.

**Table 9/V.25 ter – A command result codes**

Alphabetic (ATV1)	Numeric (ATV0)	Description
<b>CONNECT</b>	1	If connection is successfully established and <b>X0</b> is selected. This result code is transmitted immediately before circuit 109 is turned on
<b>CONNECT</b> <b>text</b>	–	If connection is successfully established and <b>Xn</b> is selected where "n" is any value other than 0. This result code is transmitted immediately before circuit 109 is turned on. The contents of <b>text</b> are manufacturer-specific, and may include indication of DTE interface speed, line speed, error control and data compression techniques in use, and other information
<b>NO CARRIER</b>	3	If a connection cannot be established, or was aborted by reception of an additional character from the DTE
<b>ERROR</b>	4	If issued while in online command state
<b>OK</b>	0	If command is aborted by either reception of an additional character from the DTE or by the DTE turning off circuit 108 (if &D1 or &D2 is selected; see 6.2.9), or if the dial string is terminated by a semicolon character

## 2.2.2.5 Voice Hangup Control +CVHU

**Table: Voice Hangup Control Syntax (+CVHU)**

Command	Possible response(s)
+CVHU=[<mode>]	OK
+CVHU?	+CVHU:<mode>
+CVHU=?	+CVHU:(list of supported <mode>s)

### Description

Set command selects whether ATH or "drop DTR" shall cause a voice connection to be disconnected or not. By voice connection is also meant alternating mode calls that are currently in voice mode.

NOTE: When <mode> = 2, this command must be seen in conjunction with the V.25ter [14] command &D. Else &D shall be ignored.

### Defined values

<mode>:

0 "Drop DTR" ignored but OK response given. ATH disconnects.

1 "Drop DTR" and ATH ignored but OK response given.

### Information examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CVHU=?

+CVHU: (0-1)

OK

AT+CVHU=0

OK

AT+CVHU?

+CVHU: 0 (ATH can disconnect call)

OK

## 2.2.2.6 Hook control (H)

**Table: Syntax (H)**

Command	Possible response(s)
H[ value ]	

### Description

This command instructs the DCE to disconnect from the line, terminating any call in progress. All of the functions of the command shall be completed before the DCE issues any result code.

### Abortability

This action may not be aborted.

### Defined values

0 Disconnect from line and terminate call.

### Result codes

OK The result code is issued after circuit 109 is turned off, if it was previously on.

**ERROR** If **value** is not recognized or supported.

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

ATH

OK

## 2.2.2.7 Automatic answer (S0)

**Table: Syntax (S0)**

Command	Possible response(s)
S0	

### Description

This S-parameter controls the automatic answering feature of the DCE. If set to 0, automatic answering is disabled. If set to a non-zero value, the DCE shall cause the DCE to answer when the incoming call indication (ring) has occurred

the number of times indicated by the value (see 6.1.2). For example, in GSTN modem applications, setting this parameter to 1 will cause the modem to answer an incoming call on the first ring.

### Defined values

**0** Automatic answering is disabled.

**1 to 255** Enable automatic answering on the ring number specified.

### Recommended default setting

**0** Automatic answering is disabled.

### Information examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT\$0=?

S0(0-255)

OK

AT\$0?

000

OK

AT\$0=1

OK

AT\$0?

001

OK

### 2.2.2.8 Monitor speaker loudness (L)

Table: Syntax (L)

Command	Possible response(s)
L[ value ]	

### Description

This parameter controls the volume of the monitor speaker. The specific loudness level indicated by "low", "medium", and "high" is manufacturer-specific, although they are intended to indicate increasing volume.

### Defined values

See Table 11.

**Table 11/V.25 ter – Speaker loudness values**

value	Description
0	Low speaker volume
1	Low speaker volume
2	Medium speaker volume
3	High speaker volume

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

ATL0

OK

ATL1

OK

ATL2

OK

ATL3

OK

## 2.2.3 Data Compression commands

### 2.2.3.1 Data compression (DS)

**Table: Syntax (+DS)**

Command	Possible response(s)
DS [ direction [, compression_negotiation [, max_dict [, max_string ]]]]	
DS?	Read syntax
DS direction , compression_negotiation , max_dict , max_string	Read syntax
DS?	Test syntax

DS: (list of supported direction values), (list of supported compression_negotiation values), (list of supported max_dict values), (list of supported max_string values)	Test syntax
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------

## Description

This extended-format compound parameter controls the V.42 bis data compression function if provided in the DCE. It accepts four numeric subparameters:

- direction , which specifies the desired direction(s) of operation of the data compression function; from the DTE point of view;
- compression\_negotiation , which specifies whether or not the DCE should continue to operate if the desired result is not obtained;
- max\_dict , which specifies the maximum number of dictionary entries which should be negotiated (may be used by the DTE to limit the codeword size transmitted, based on its knowledge of the nature of the data to be transmitted);
- max\_string , which specifies the maximum string length to be negotiated (V.42 bis P2).

**Defined values** See Table 26.

**Table 26/V.25 ter – Data compression control subparameters**

direction	Description
0	Negotiated ... no compression (V.42 bis P0 0)
1	Transmit only
2	Receive only
3	Both directions, accept any direction (V.42 bis P0 11)
compression_negotiation	Description
0	Do not disconnect if Rec. V.42 bis is not negotiated by the remote DCE as specified in direction

<b>1</b>	Disconnect if Rec. V.42 bis is not negotiated by the remote DCE as specified in direction
<b>max_dict :</b>	<b>512 to 65535</b>
<b>max_string :</b>	<b>6 to 250</b>

### Recommended default settings

For direction : 3  
 For compression\_negotiation : 0  
 For max\_dict : Determined by the manufacturer  
 For max\_string : 6

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command
   
AT+DS?  
 +DS: 0,0,2048,6  
 OK

AT+DS =?  
 +DS: (0-3),(0),(512-2048),(6)  
 OK

### 2.2.3.2 Data compression reporting (DR)

Table: Syntax (+DR)

Command	Possible response(s)
<b>DR value</b>	
<b>DR?</b>	Read syntax
<b>DR: current setting</b>	Read syntax
<b>DR ?</b>	Test syntax
<b>+DR: (list of supported values)</b>	Test syntax

### Description

This extended-format numeric parameter controls whether or not the extended-format "DR:" intermediate result code is transmitted from the DCE to the DTE. The DR: type reported shall represent the current (negotiated or renegotiated) DCE-DCE data compression type. If enabled, the intermediate result code is transmitted at the point after error control negotiation (handshaking) at which the DCE has determined which data compression technique will be used (if any) and the direction of operation. The format of this result code is the following (see Table 27):

**Table 27/V.25 ter – Data compression reporting intermediate result codes**

<b>DR: NONE</b>	Data compression is not in use
<b>DR: V42B</b>	Rec. V.42 <i>bis</i> is in use in both directions
<b>DR: V42B RD</b>	Rec. V.42 <i>bis</i> is in use in receive direction only
<b>DR: V42B TD</b>	Rec. V.42 <i>bis</i> is in use in transmit direction only

The DR intermediate result code, if enabled, is issued after the Error Control Report (ER) and before the final result code (e.g. CONNECT).

### Defined values

See Table 28.

**Table 28/V.25 ter – Data compression reporting values**

value	Description
0	Data compression reporting disabled (no DR result code transmitted)
1	Data compression reporting enabled (DR result code transmitted)

### Recommended default setting

0

### Information examples

- Initial the HyperTerminal
- Initial the MS
- AT Command
  - AT+DR=?
  - +DR: (0-1)

# Qisda

OK

AT+DR?

+DR: 0

OK

AT+DR=1

OK

AT+DR?

+DR: 1

OK

## 2.3 Commands related to short message service

### **SMS Text Mode & PDU Mode**

#### **Parameter Definitions**

The following parameters are used in the subsequent clauses which describe all commands.

#### **Message Storage Parameters**

- <index> integer type (1-256); value in the range of location numbers supported by the associated memory
- <mem1> string type; memory from which messages are read, and deleted; defined value:
  - “BM” broadcast message storage
  - “ME” ME message storage
  - “MT” any of the storages associated with ME
  - “SM” (U)SIM message storage
  - “SR” status report storage
- <mem2> string type; memory to which writing and sending operations are made; refer <mem1> for defined values
- <mem3> string type; memory to which received SMs are preferred to be stored (unless forwarded directly to TE; refer command New Message Indications +CNMI); refer <mem1> for defined values
- <stat> integer type in PDU mode (default 0), or string type in text mode (default "REC UNREAD"); indicates the status of message in memory; defined values:
  - 0 "REC UNREAD" received unread message (i.e. new message)
  - 1 "REC READ" received read message
  - 2 "STO UNSENT" stored unsent message (only applicable to SMS)
  - 3 "STO SENT" stored sent message (only applicable to SMS)
  - 4 "ALL" all messages (only applicable to +CMGL command)

#### **Message Data Parameters**

- <alpha> string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; used character set should be the one selected with command Select TE Character Set +CSCS

<da>	3GPP TS 23.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in 3GPP TS 27.07); type of address given by <toda>
<data>	In the case of SMS: 3GPP TS 23.040 TP-User-Data in text mode responses; format: <ul style="list-style-type: none"><li>- if &lt;dcs&gt; indicates that 3GPP TS 23.038 default alphabet is used and &lt;fo&gt; indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set:<ul style="list-style-type: none"><li>- if TE character set other than "HEX" (refer +CSCS) : ME/TA converts GSM alphabet into current TE character set according to rules of Annex A</li><li>- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character Π(GSM 23) is presented as 17 (IRA 49 and 55))</li></ul></li><li>- if &lt;dcs&gt; indicates that 8-bit or UCS2 data coding scheme is used, or &lt;fo&gt; indicates that GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))</li></ul>
<dcs>	depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (default 0)
<dt>	GSM 03.40 TP-Discharge-Time in time-string format: "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
<fo>	depending on the command or result code: first octet of 3GPP 23.040 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format
<length>	Integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the

	length)
<mr>	3GPP TS 23.040 TP-Message-Reference in integer format
<oa>	3GPP TS 23.040 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer +CSCS); type of address given by <tooa>
<pdu>	In the case of SMS: 3GPP TS24.011 SC address followed by 3GPP TS 23.040 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
<pid>	3GPP TS 23.040 TP-Protocol-Identifier in integer format (default 0) 0x00 plain text 0x21 telex 0x22 group 3 telefax 0x23 group 4 telefax 0x24 voice telephone 0x25 ERMES 0x26 National paging system 0x32 Internet Electronic Mail
<ra>	3GPP TS 23.040 TP-Recipient-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer +CSCS); type of address given by <tora>
<sca>	3GPP TS 24.011 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer +CSCS); type of address given by <tosca>
<scts>	3GPP TS 23.040 TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)
<sn>	3GPP TS 23.041CBM Serial Number in integer format
<st>	3GPP 23.040 TP-Status in integer format
<toda>	3GPP 24.011 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)

<tooa>	3GPP 24.011 TP-Originating-Address Type-of-Address octet in integer format (default refer <toda>)
<tosca>	3GPP 24.011 RP SC address Type-of-Address octet in integer format (default refer <toda>)
<tora>	3GPP 24.011 TP-Originating-Address Type-of-Address octet in integer format (default refer <toda>)
<vp>	depending on SMS-SUBMIT <fo> setting: 3GPP 23.040 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <dt>), or if \$(EVPF)\$ is supported, in enhanced format (hexadecimal coded string with double quotes)
(text&PDU)	Commands available on both text and PDU mode
(text)	Commands available on only text mode
(PDU)	Commands available on only PDU mode

## 2.3.1 General Configuration Commands

### 2.3.1.1 Select Message Service +CSMS

Table: +CSMS parameter command syntax (text & PDU)

Command	Possible response(s)
+CSMS=<service>	1) +CSMS: <mt>,<mo>,<bm> 2) +CMS ERROR: <err>
+CSMS?	+CSMS: <service>,<mt>,<mo>,<bm>
+CSMS=?	+CSMS: (list of supported <service>s)

#### Description

Set command selects messaging service <service>. It returns the types of messages supported by the ME: <mt> for mobile terminated messages, <mo> for mobile originated messages and <bm> for broadcast type messages. If chosen service is not supported by the ME (but is supported by the TA), final result code +CMS ERROR: <err> shall be returned. See chapter Message Service Failure Result Code for a list of <err> values.

Also read command returns supported message types along the current service setting. Test command returns a list of all services supported by the TA.

#### Defined values

<service>:

0	GSM 03.40 and 03.41
1	GSM 03.40 and 03.41(the requirement of <service> setting 1 is mentioned under corresponding command descriptions.)

<mt>, <mo>, <bm>:

0	type not supported
1	type supported

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

(1) Set Message Service

```
AT+CSMS=0
+CSMS:1,1,1
OK
```

(2) Show Message Service

```
AT+CSMS?
+CSMS:0,1,1,1
OK
```

### 2.3.1.2 Preferred Message Storage +CPMS

Table: +CPMS parameter command syntax

Command	Possible response(s)
+CPMS=<mem1>[,<mem2>][,<mem3>]	1) +CPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3> 2) +CMS ERROR: <err>
+CPMS?	1) +CPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3> 2) +CMS ERROR: <err>
+CPMS=?	+CPMS: (list of supported <mem1>s), (list of supported <mem2>s), (list of supported <mem3>s)

## Description

Set command selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc. If chosen storage is not appropriate for the ME (but is supported by the TA), final result code +CMS ERROR: <err> shall be returned. See chapter Message Service Failure Result Code for a list of possible <err> values.

Test command returns lists of memory storages supported by the TA.

<**mem1**>: Memory used to list, read and delete messages. It can be:  
“SM”: SMS message storage in SIM (default)

<**mem2**>: Memory used to write and send messages  
“SM”: SMS message storage in SIM (default).

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

```
AT+CPMS= "SM","SM","SM"
+CPMS: 3,15,3,15,3,15
OK
```

```
AT+CPMS?
+CPMS: "SM",3,15,"SM",3,15,"SM",3,15
OK
```

### 2.3.1.3 Message Format +CMGF

**Table: +CMGF parameter command syntax (text & PDU)**

Command	Possible response(s)
+CMGF=[<mode>]	+CMS ERROR: <err>
+CMGF?	+CMGF: <mode>
+CMGF=?	+CMGF: (list of supported <mode>s)

## Description

Set command tells the TA, which input and output format of messages to use. <mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from received messages.

Mode can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters). Text mode uses the value of parameter <chset> specified by command Select TE Character Set +CSCS to inform the character set to be used in the message body in the TA-TE interface.

Test command returns supported modes as a compound value.

### Defined values

<mode>:

- |   |                    |
|---|--------------------|
| 0 | PDU mode (default) |
| 1 | text mode          |

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

- (1) Set Text Mode

```
AT+CMGF=1
OK
```

```
AT+CMGF?
+CMGF: 1
OK
```

- (2) Set PDU mode (default)

```
AT+CMGF?
+CMGF: 0
OK
```

## 2.3.2 Message Configuration Commands

### 2.3.2.1 Service Centre Address +CSCA

Table: +CSCA parameter command syntax (text & PDU)

Command	Possible response(s)
+CSCA = <sca>[,<tosca>]	1) OK 2) ERROR

+CSCA?	+CSCA: <sca>,<tosca>
--------	----------------------

## Description

Set command updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by send and write commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into <pdu> parameter equals zero.

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

### (1) Set SC address

AT+CSCA=”+886935874443”,145

OK

### (2) Read SC address

AT+CSCA?

+CSCA: “+886935874443”,145

OK

### 2.3.2.2 Set Text Mode Parameters +CSMP

Table: +CSMP parameter command syntax (text)

Command	Possible response(s)
+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]]	OK
+CSMP?	+CSMP: <fo>,<vp>,<pid>,<dcs>

## Description

Set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected. It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> is in range 0... 255) or define the absolute time of the validity period termination (<vp> is a string). The format of <vp> is given by <fo>.

NOTE: When storing a SMS-DELIVER from the TE to the preferred memory storage in text mode (refer command Write Message to Memory +CMGW),

<vp> field can be used for <scts>.

## Defined values

<fo>: integer type

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Bit 4, Bit 3			TP-VPF				
	0	0	TP-VP field not present				
	1	0	TP-VP field present – relative format				
	0	1	TP-VP field present – enhanced format (not supported)				
	1	1	TP-VP field present – absolute format				
Bit 2			TP-RD (Reserved)				
Bit 1, Bit 0			TP-MTI				
	0	1	SMS-SUBMIT (in the direction MS to SC)				

<vp>: integer type

0 to 143	(vp + 1) * 5 minutes
144 to 167	12 hours + ((vp - 143) * 30 minutes)
168 to 196	(vp - 166) * 1 day
197 to 255	(vp - 192) * 1 week

<pid>: integer type

Please see 03.40 TP-Protocol-Identifier (TP-PID) description. Default 0.

<dcs>: integer type

0x00	Default alphabet (default)
0x04	8 bit data
0x08	UCS2 (16bit)

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Set parameter for saving/sending short message (<vp> field is relative format,

<vp> = 2 days, <pid> = 0, <dcs>=0)

AT+CSMP=17,168,0,0

OK

- (2) Set parameter for 8bit message and keeps other parameter unchanged  
AT+CSMP=,,4  
OK

### 2.3.2.3 Show Text Mode Parameters +CSDH

**Table: +CSDH parameter command syntax (text)**

Command	Possible response(s)
+CSDH=<show>	1) OK 2) ERROR
+CSDH?	+CSDH: <show>
+CSDH=?	+CSDH: (list of supported <show>s)

#### Description

Set command controls whether detailed header information is shown in text mode result codes.

#### Defined values

<show>:

- 0 do not show header values defined in commands +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooaa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERS and SMS-SUBMITs in text mode; for SMS-COMMANDs in +CMGR result code, do not show <pid>, <mn>, <da>, <toda>, <length> or <cdata>
- 1 show the values in result codes

#### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

- (1) Set command

AT+CSDH=1  
OK

- (2) Read command

AT+CSDH?  
+CSDH: 1

OK

(3) Test command

AT+CSDH=?

+CSDH: (0,1)

OK

### 2.3.2.4 Select Cell Broadcast Message Types +CSCB

**Table: +CSCB parameter command syntax (text & PDU)**

Command	Possible response(s)
+CSCB = [<mode>[,<mids>[,<dcss>]]]	1) OK 2) ERROR
+CSCB?	+CSCB: <mode>,<mids>,<dcss>
+CSCB=?	+CSCB: (list of supported <mode>s)

#### Description

Set command selects which types of CBMs are to be received by the ME.

Test command returns supported modes as a compound value.

If <mids> or <dcss> set empty string, there is no action on <mids> or <dcss>.

#### Defined values

<mode>:

- 0 message types specified in <mids> and <dcss> are accepted
- 1 message types specified in <mids> and <dcss> are not accepted

<mids>: string type; all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string); e.g.

“0,1,5,320-478,922”

<dcss>: string type; all different possible combination of CBM data coding schemes (refer <dcs>) (default is empty string); e.g. “0-3,5”

**Note:** Supported values for parameter <mids> and <dcss>: maximum of 20 ranges could be declared for each parameter.

#### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

(1) read message types

AT+CSCB?

+CBCB: 0,"1,4,10","2,3"

OK

(2) set message types

Note: the number of <mids> and <dcss> depends on services scope of the service provider.

(a) set <mids>,<dcss> in the command to be accepted . And the number of <mids>,<dcss> are in the supported range.

AT+CSCB=0,"1,4,5","3,4"

+CMS ERROR: 302

OK

AT+CSCB?

+CSCB: 0,"0,221,1,30,200,3084,22,300,4,40,223,2,20,5","3,4"

OK

(b) <mids> or <dcss> setting are out of the supported range

AT+CSCB=0,"65536","7,8"

+CMS ERROR: 302

AT+CSCB?

+CSCB: 0,"0,221,1,30,200,3084,22,300,4,40,223,2,20,5","7,8"

OK

Note: The values are set step by step, so, the values behind the supported range are discarded with a +CMS error.

(c) set <mids> or <dcss> in the command to be unaccepted.

AT+CSCB=1,"2-5","8"

OK

AT+CSCB?

+CSCB: 1,"0,221,1,30,200,3084,22,300,4,40,223,2,20,5","8"

OK

### 2.3.3 Message Receiving and Reading Commands

#### 2.3.3.1 New Message Indications to TE +CNMI

Table: +CNMI parameter command syntax (text & PDU)

Command	Possible response(s)
+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	1) OK 2) +CMS ERROR: <err>
+CNMI?	+CNMI: <mode>,<mt>,<bm>,<ds>, <bfr>
+CNMI=?	+CNMI: (list of supported <mode>s), (list of supported <mt>s), (list of supported <bm>s), (list of supported <ds>s), (list of supported <bfr>s)

#### Description

Set command selects the procedure, how receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON.

<mode> controls the processing of unsolicited result codes specified within this command, <mt> sets the result code indication routing for SMS-DELIVERs, <bm> for CBMs and <ds> for SMS-STATUS-REPORTs. <bfr> defines the handling method for buffered result codes when <mode> 1, 2 or 3 is enabled. If ME does not support requested item (although TA does), final result code +CMS ERROR: <err> is returned.

Test command gives the settings supported by the TA as compound values.

NOTE: Command Select Message Service +CSMS should be used to detect ME support of mobile terminated SMs and CBMs, and to define whether a message routed directly to TE should be acknowledged or not.

#### Defined values

<mode>

0

Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new receiver indications.

1

Discard indication and reject new received message unsolicited result code when TA-TE link is reserved (e.g.

in on-line data mode). Otherwise forward them directly to the TE.

- 2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

<mt>

0 No SMS-DELIVER (message to ME) indications are routed to the TE. Default.

1 SMS-DELIVER is stored in ME. Indication of the memory location is routed to the TE by using the unsolicited result code:

+CMTI: <mem>, <index>

2 class 0, class 1 and class 3 SMS-DELIVERs are routed directly to the TE using unsolicited result code:

+CMT: [<alpha>],<length><CR><LF><pdu> (PDU mode enabled)

or

+CMT: <oa>, <alpha>],<scts>,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (text mode enabled; about parameters in italics, refer command +CSDH)

class 0 message and messages in the message waiting indication group (discard message), may be copied to TE, In this case , ME shall send the acknowledgement to the network.

Class2 message and messages in the message waiting indication group (store message) result in indication as defined in <mt>=1

<bm>

0 No CBM indications are routed to the TE. Default

2 CBM is routed directly to the TE by using the unsolicited result code:

+CBM: <length><CR><LF><pdu> (PDU mode enabled)

or

+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)

refer to 03.41, Content of message is limited to 82 bytes and total pages are no more than 15.

<ds>

0

No SMS-STATUS-REPORTs are routed to the TE

1

SMS-STATUS-REPORTs are routed to the TE using unsolicited result code:

+CDS: <length><CR><LF><pdu> (PDU mode enabled)

or

+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)

<bfr>

0

TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes)

1

TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1..3 is entered.

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT+CNMI=?

+CNMI: (0-2),(0-3),(0,2),(0,1),(0,1)

OK

AT+CNMI?

+CNMI: 0,0,0,0,0

OK

AT+CNMI =0,0,0,0,0

OK

AT+CNMI?

+CNMI: 0,0,0,0,0

OK

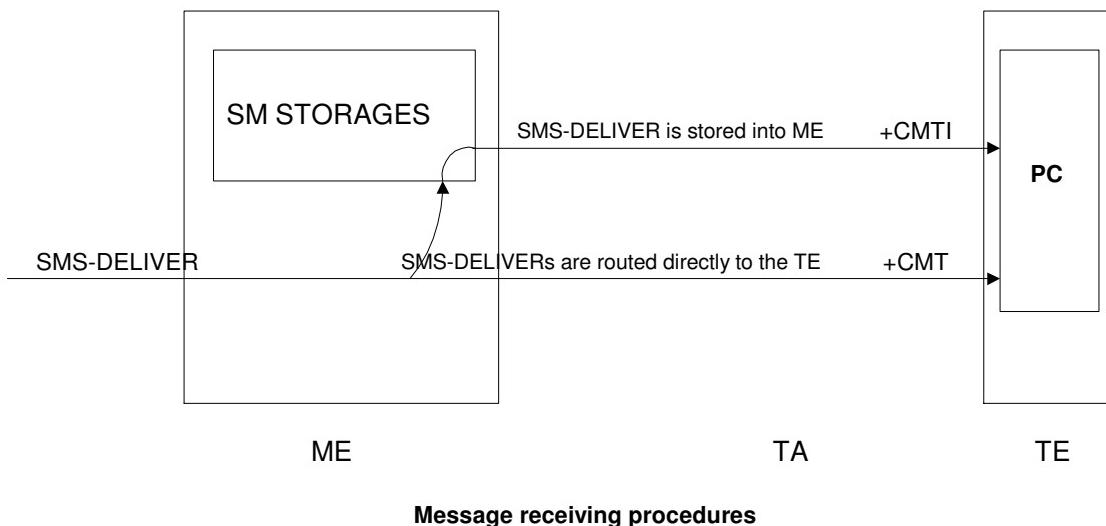
AT+CNMI =1,3,2,1,1

OK

AT+CNMI?

+CNMI: 1,3,2,1,1

OK



### 2.3.3.2 List Messages +CMGL

Table: +CMGL Action Command Syntax (text)

Command	Possible response(s)
+CMGL[=<stat>]	<b>1) if text mode (+CMGF=1), command successful and SMS-SUBMITs and/or SMS-DELIVERS:</b> +CMGL: <index>,<stat>,<oa/da>,[<alpha>], [<scts>][,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<da/oa>,[<alpha>], [<scts>][,<tooa/toda>,<length>]<CR><LF><data>

	a>[...] <b>2) otherwise:</b> +CMS ERROR: <err>
--	------------------------------------------------------

## Description

Execution command returns messages with status value <stat> from message storage <mem1> to the TE. About text mode parameters in italics, refer command Show Text Mode Parameters +CSDH. If status of the message is 'received unread', status in the storage changes to 'received read'. If listing fails, final result code +CMS ERROR: <err> is returned.

NOTE: If the selected <mem1> can contain different types of SMs (e.g. SMS-DELIVERs, SMS-SUBMITs), the response may be a mix of the responses of different SM types. TE application can recognize the response format by examining the third response parameter.

## Defined values

<stat> integer type in PDU mode (default 0), or string type in text mode (default "REC UNREAD"); indicates the status of message in memory; defined values:

- 0 "REC UNREAD" received unread message (i.e. new message)
- 1 "REC READ" received read message
- 2 "STO UNSENT" stored unsent message (only applicable to SMS)
- 3 "STO SENT" stored sent message (only applicable to SMS)
- 4 "ALL" all messages (only applicable to +CMGL command)

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

```
AT+CMGF=1
OK
AT+CMGL="ALL"
+CMGL: 2,"STO UNSENT","0921214863",,,129,4
TEST
OK
AT+CMGL="STO UNSENT"
+CMGL: 2,"STO UNSENT","0921214863",,,129,4
```

TEST  
OK

### 2.3.3.3 Read Message +CMGR

**Table: +CMGR Action Command Syntax (text)**

Command	Possible response(s)
+CMGR=<index>[,<State>]	<p><b>1) if text mode (+CMGF=1), command successful and SMS-DELIVER:</b>  +CMGR:  &lt;stat&gt;,&lt;oa&gt;,[&lt;alpha&gt;],&lt;scts&gt;[,&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p> <p><b>2) if text mode (+CMGF=1), command successful and SMS-SUBMIT:</b>  +CMGR: &lt;stat&gt;,&lt;da&gt;,[&lt;alpha&gt;][,&lt;toda&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,[&lt;vp&gt;],&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p> <p><b>3) If reading fails:</b>  +CMS ERROR: &lt;err&gt;</p>

#### Description

Execution command returns message with location value <index> from message storage <mem1> to the TE. About text mode parameters in italics, refer command Show Text Mode Parameters +CSDH. If status of the message is 'received unread', status in the storage changes to 'received read'. If reading fails, final result code +CMS ERROR:<err> is returned.

<State>: If <State> equal to 1, MS will not change the reading state of the message. If <State> equal to 0, MS will change the reading state of the message.

#### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command
  - (1) read the message

AT+CMGR=0;+CMGR=1;+CMGR=2

+CMGR: 2,,26

079188968343482211B602812500008F13683A1DAE7BBDEEF7BB4B5C  
76C75DE3771B

+CMGR: 2,,26

079188968343482211B602812500008F13683A1DAE7BBDEEF7BB4B5C  
76C75DE3771B

+CMGR: 2,,36

079188968343482251B702812200008F1E040D021800A0E974B8EEF5B  
ADFEF2E71D91D778DDF6D90  
3A4C0601

(2) reading fail

AT+CMGR=3

ERROR

#### 2.3.3.4 NEW Message Acknowledgement to ME/TA +CNMA

**Table: +CNMA Action Command Syntax**

Command	Possible response(s)
If text mode (+CMGF=1): +CNMA	+ CMS ERROR: <err>
+CNMA=?	

#### Description

Execution command confirms correct reception of a new message (SMS=DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE (refer command +CNMI tables 2 and 4). This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1. TA shall not send another +CMT or +CDS result code to TE before previous one is acknowledged.

If ME does not get acknowledgement within required time (network timeout), ME should send RP-ERROR to the network. ME/TA shall automatically disable routing to TE setting both <mt> and <ds> values of +CNMI to zero.

If command is executed, but no acknowledge is excepted, or some other ME related error occurs, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for a list of <err> values.

**NOTE:** In case that a directly routed message must be buffered in ME/TA (possible when +CNMI parameter <mode> equals 0 or 2) or AT interpreter remains too long in a state where result codes cannot be sent to TE (e.g. user is entering a message using +CMGS), acknowledgement (RP-ACK) must be sent to the network without +CNMA command from TE. Later, when buffered result codes are flushed to TE, TE must send +CNMA acknowledgement for each result code. In this way, ME/TA can determine if message should be placed in non-volatile memory and routing to TE disabled(+CNMA not received). Refer command +CNMI for more details how to use <mode> parameter reliably.

### Informative examples

None Support

## 2.3.4 Message Sending and Writing Commands

### 2.3.4.1 Send Message +CMGS

Table: +CMGS Action Command Syntax (text)

Command	Possible response(s)
<b>if text mode (+CMGF=1):</b> +CMGS=<da>[,<toda>]<CR> <i>text is entered &lt;ctrl-Z/ESC&gt;</i>	<b>1) if text mode (+CMGF=1) and sending successful:</b> +CMGS: <mr>[,<scts>] <b>2) if sending fails:</b> +CMS ERROR: <err>

### Description

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. This command should be abortable.

## Description

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. Value can be used to identify message upon unsolicited delivery status report result code.

- entered text (3GPP TS 23.040 TP-Data-Unit) is sent to address <da> and all current settings (refer Set Text Mode Parameters +CSMP and Service Centre Address +CSCA) are used to construct the actual PDU in ME/TA
- the DCD signal shall be in ON state while text is entered
- the echoing of entered characters back from the TA is controlled by V.25ter echo command E
- the entered text should be formatted as follows:
- if <dcs> (set with +CSMP) indicates that 3GPP TS 23.038 default alphabet is used and <fo> indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set:
- if TE character set other than "HEX" (refer command Select TE Character Set +CSCS in 3GPP TS 27.007):ME/TA converts the entered text into GSM alphabet according to rules of Annex A; backspace can be used to delete last character and carriage returns can be used
- if TE character set is "HEX": the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts to 7-bit characters of GSM alphabet (e.g. 17 (IRA 49 and 55) will be converted to character ψ (GSM 23))
- if <dcs> indicates that 8-bit or UCS2 data coding scheme is used or <fo> indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is set: the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. two characters 2A (IRA 50 and 65) will be converted to an octet with integer value 42)
- sending can be cancelled by giving <ESC> character (IRA 27)
- <ctrl-Z> (IRA 26) must be used to indicate the ending of the message body

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command
  - AT+CMGF=1
  - OK

```
AT+CMGS=?
OK
OK
AT+CMGS="0921214863"
> TEST
+CMGS: 230
OK
OK
```

### 2.3.4.2 Send Message from Storage +CMSS

Table: +CMSS Action Command Syntax (text)

Command	Possible response(s)
<b>if text mode (+CMGF=1): +CMSS=&lt;index&gt;[,&lt;da&gt;[,&lt;toda&gt;]]</b>	<b>1) If text mode (+CMGF=1) and sending successful:</b> +CMSS: <mr> <b>2) if sending fails:</b> +CMS ERROR: <err>

#### Description

Execution command sends message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT). If new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. This command should be abortable.

#### Defined values

<index>: integer type  
<da>: string type  
<toda>: integer type

#### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

```
AT+CMGF=1
OK
```

```
AT+CMGW="0921214863"
> TEST1
+CMGW: 11
OK
AT+CMSS=11
+CMSS: 234
OK
```

### 2.3.4.3 Write Message to Memory +CMGW

Table: +CMGW Action Command Syntax (text)

Command	Possible response(s)
<b>if text mode (+CMGF=1):</b> +CMGW[=<da>[,<toda>[, <stat>]]]<CR> <i>text is</i> <i>entered &lt;ctrl-Z/ESC&gt;</i>	<b>1) If saving successful:</b> +CMGW: <index> <b>2) If saving fails:</b> +CMS ERROR: <err>

#### Description

Execution command stores message (SMS-SUBMIT) to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to "stored unsent". The entering of text is done similarly as specified in command Send Message +CMGS.

#### Defined values

<stat>

2      Stored unsent

#### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

##### (1) Writing SM in GSM

We try to send "TEST" to number "0921214863"

AT+CMGF=1

OK

AT+CSCS="GSM"

OK

AT+CSMP=17,168,0,0

```
OK
AT+CMGW="0921214863",129,"STO UNSENT"<CR>
>TEST<ctrl-z>
+CMGW:12
OK
```

#### 2.3.4.4 Delete Message +CMGD

**Table: +CMGD Action Command Syntax (text & PDU)**

Command	Possible response(s)
+CMGD=<index>	1) OK 2) +CMS ERROR: <err>

#### Description

Execution command deletes message from preferred message storage <mem1> location <index>.

#### Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

Delete Message number 7

AT+CMGD=7 (delete message)

OK

#### 2.3.4.5 Send Command +CMGC

**Table: +CMGC Action Command Syntax (Text mode)**

Command	Possible response(s)
If text mode (+CMGF=1) +CMGC=<fo>, <ct>[,<pid>[,<mn>[,<da>[,<toda>]]]<CR> > Text is entered<ctrl-z/> ESC>	1) If text mode (+CMGF=1) and sending successful: +CMGC: <mr>[,<scts>] 2) if sending fails: +CMS ERROR: <err>

#### Description

Execution command sends a command message from a TE to the network

(SMS-COMMAND). The entering of text is done similarly as specified in command Send Message +CMGS, but the format is fixed to be a sequence of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octets.

### Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+COPS?

+COPS: 0,2,"46601",0

OK

AT+CSCA?

+CSCA: "0931000099",129

OK

AT+CSCA="0931000099",129

OK

AT+CMGF=1

OK

AT+CMGC=,,,,"0928930064"

> abcdef

+CMGC: 45

OK

### 2.3.5 PDU Mode

#### 2.3.5.1 List Message +CMGL

Table: +CMGL Action Command Syntax (PDU)

Command	Possible response(s)

+CMGL[=<stat>]	1) if PDU mode (+CMGF=0) and command successful: +CMGL: <index>,<stat>,[<alpha>], <length><CR><LF><pdu>[<CR><LF>]+CM GL: <index>,<stat>,[<alpha>], <length><CR><LF><pdu>[...]] 2) otherwise: +CMS ERROR: <err>
+CMGL=?	+CMGL: (list of supported <stat>s)

## Description

Execution command returns messages with status value <stat> from preferred message storage <mem1> to the TE. Entire data units <pdu> are returned. If status of the message is 'received unread', status in the storage changes to 'received read'. If listing fails, final result code +CMS ERROR: <err> is returned.

Test command shall give a list of all status values supported by the TA.

## Defined values

<stat>      integer type in PDU mode (default 0), or string type in text mode (default "REC UNREAD"); indicates the status of message in memory; defined values:

- 0 "REC UNREAD" received unread message (i.e. new message)
- 1 "REC READ" received read message
- 2 "STO UNSENT" stored unsent message (only applicable to SMS)
- 3 "STO SENT" stored sent message (only applicable to SMS)
- 4 "ALL" all messages (only applicable to +CMGL command)

## Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

(1)

```
AT+CMGL=?
+CMGL: (0,1,2,3,4)
OK
```

(2)

```
AT+CMGF=0
AT+CMGL=2
+CMGL: 1,2,,8
0791889683434822110000800004A800
+CMGL: 2,2,,36
079188968343482251B702812200008F1E040D021800A0E974B8EEF5B
ADFEF2E71D91D778DDF6D903A4C0601
+CMGL: 3,2,,8
0791889683434822110000800004A800
+CMGL: 4,2,,35
079188968343482251BA02812500008F1D0A0A030606010A030C040208
93D567BA421D26ABE98A7B5B1D06
+CMGL: 5,2,,9
0791889683434822110000800004A801E1
+CMGL: 6,2,,9
0791889683434822110000800004A801E4
OK
```

### 2.3.5.2 Read Message +CMGR

Table: +CMGR Action Command Syntax (PDU)

Command	Possible response(s)
+CMGR=<index>	1) if PDU mode (+CMGF=0) and command successful: +CMGR:<stat>,[<alpha>],<length><CR><LF> <pdu> 2) otherwise: +CMS ERROR: <err>

### Description

Execution command returns message with location value <index> from preferred message storage <mem1> to the TE. Status of the message and entire message data unit <pdu> is returned. If status of the message is 'received unread', status in the storage changes to 'received read'. If reading fails, final result code +CMS ERROR: <err> is returned.

## Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

(1)AT+CMGR=?

OK

AT+CMGR?

OK

(2)AT+CMGF=0

OK

AT+CMGR=2

+CMGR: 2,,36

079188968343482251B702812200008F1E040D021800A0E974B8EEF5B

ADFEF2E71D91D778DDF6D90

3A4C0601

OK

AT+CMGR=4

+CMGR: 2,,35

079188968343482251BA02812500008F1D0A0A030606010A030C040208

93D567BA421D26ABE98A7B

5B1D06

OK

AT+CMGR=3

+CMGR: 2,,8

0791889683434822110000800004A800

OK

### 2.3.5.3 Send Message +CMGS

Table: +CMGS Action Command Syntax (PDU)

Command	Possible response(s)
<b>if PDU mode (+CMGF=0):</b> +CMGS=<length><CR> <i>PDU is given&lt;ctrl-Z/ESC&gt;</i>	<b>1) if PDU mode (+CMGF=0) and sending successful:</b> +CMGS: <mr>[,<ackpdu>] <b>2) if sending fails:</b> +CMS ERROR: <err>

## Description

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. This command should be abortable.

- <length> must indicate the number of octets coded in the TP layer data unit to be given (i.e. SMSC address octets are excluded)
- the PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; ME/TA converts this coding into the actual octets of PDU
- when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command Service Centre Address +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU, i.e. TPDU starts right after SMSC length octet
- sending can be cancelled by giving <ESC> character (IRA 27)
- <ctrl-Z> (IRA 26) must be used to indicate the ending of PDU

## Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+CMGS=?

OK

OK

### 2.3.5.4 Send Message from Storage +CMSS

Table: +CMSS Action Command Syntax (PDU)

Command	Possible response(s)
<b>if text mode (+CMGF=0):</b> +CMSS=<index>[,<da>[,<toda>]]	<b>1) If PDU mode (+CMGF=0) and sending successful:</b> +CMSS: <mr> <b>2) if sending fails:</b> +CMS ERROR: <err>

## Description

Execution command sends message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT). If new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. This command should be aborted.

## Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

```
AT+CMSS=8
+CMSS: 3
OK
```

## 2.3.5.5 Write Message to Memory +CMGW

Table: +CMGW Action Command Syntax (PDU)

Command	Possible response(s)
<b>If PDU mode (+CMGF=0):</b> <b>+CMGW[=&lt;length&gt;[,&lt;stat&gt;]&lt;CR&gt;</b> <b>PDU is given &lt;ctrl-Z/ESC&gt;</b>	1) +CMGW: <index> 2) +CMS ERROR: <err>

## Description

Execution command stores a message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given. The entering of PDU is done similarly as specified in command Send Message +CMGS. If writing fails, final result code +CMS ERROR: <err> is returned.

Note: SMS-COMMANDs and SMS-STATUS-REPORTs cannot be stored in text mode.

## Informative Examples

Reopen

### 2.3.5.6 Send Command +CMGC

**Table: +CMGC Action Command Syntax**

Command	Possible response(s)
If PDU mode (+CMGF=0) +CMGC=<length><CR> > PDU is fiven<ctrl-z/ ESC>	1) If PDU mode (+CMGF=0) and sending successful: +CMGC: <mr>[,<ackpdu>] 2) if sending fails: +CMS ERROR: <err>

#### Description

Execution command sends a command message from a TE to the network (SMS-COMMAND). The entering of PDU is done similarly as specified in command Send Message +CMGS. Message reference value <mr> is returned to the TE on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <ackpdu> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for a list of <err> values. This command should be abortable.

#### Informative Examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT+CMGF=0

OK

AT+CMGL=4

+CMGL: 1,,24

0791889663000009040C9188960635305500007021102263022305F4F29C1E03

+CMGL: 11,3,,19

06819013000099112A0A81902530011500108F06ED72FB2DCF03

+CMGL: 14,3,,19

06819013000099312E0A8190823900460000FF06351B2E379301

OK

# Qisda

AT+CMGC=19

> 06819013000099312E0A8190823900460000FF06351B2E379301

+CMGC: 48

OK

## 2.4 GPRS related commands

### 2.4.1 Define PDP Context +CGDCONT

**Table: +CGDCONT parameter command syntax**

Command	Possible response(s)
+CGDCONT=[<cid> [,<PDP_type> <APN> [<PDP_addr> ,<d_comp> [<h_comp> [<pd1> ,...[,pdN]]]]]]]	1) OK 2) ERROR
+CGDCONT?	+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp>[,<pd1>[,...[,pdN]]] [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <data_comp>, <head_comp>[,<pd1>[,...[,pdN]]] [...]]
+CGDCONT=?	+CGDCONT: (range of supported <cid>s), <PDP_type>,,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[,(list of supported <pd1>s)[,...[,,(list of supported <pdN>s)]]]] [<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[,(list of supported <pd1>s)[,...[,,(list of supported <pdN>s)]]]] [...]]

#### Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.

A special form of the set command, +CGDCONT= <cid> causes the values for context number <cid> to become undefined.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value. If the MT supports several PDP types, <PDP\_type>, the parameter value ranges for each <PDP\_type> are returned on a separate line.

### Defined values

<cid>: (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.

<PDP\_type>: (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol

IP	Internet Protocol (IETF STD 5)
IPV6	Internet Protocol, version 6 (IETF RFC 2460)
PPP	Point to Point Protocol (IETF STD 51)

<APN>: (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.

If the value is null or omitted, then the subscription value will be requested.

<PDP\_address>: a string parameter that identifies the MT in the address space applicable to the PDP.

If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.

The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.

<d\_comp>: a numeric parameter that controls PDP data compression

0 - off (default if value is omitted)

1 – on

Other values are reserved.

<h\_comp>: a numeric parameter that controls PDP header compression  
0 - off (default if value is omitted)  
1 – on  
Other values are reserved.

NOTE: At present only one data compression algorithm (V.42bis) is provided in SNDCP. If and when other algorithms become available, a command will be provided to select one or more of these.

<pd1>, <pdN>: zero to N string parameters whose meanings are specific to the <PDP\_type>

For PDP type OSP: IHOSS the following parameters are defined:

<pd1> = <host> the fully formed domain name extended hostname of the Internet host  
<pd2> = <port > the TCP or UDP port on the Internet host  
<pd3> = <protocol> the protocol to be used over IP on the Internet - "TCP" or "UDP"

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

- (1) Set APN for TWNGSM
  - AT+CGDCONT=1,"IP","internet",,
  - OK
- (2) Query +CGDCONT
  - AT+CGDCONT?
  - +CGDCONT: 1, "IP", "internet", "",0,0

## 2.4.2 Quality of Service Profile (Request) +CGQREQ

Table: +CGQREQ parameter command syntax

Command	Possible Response(s)
+CGQREQ=[<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak>	1) OK 2) ERROR

[,<mean>]]]]]	
+CGQREQ?	+CGQREQ: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> [...]]
+CGQREQ=?	+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQREQ:<PDP_type>,(list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [...]]

## Description

This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network.

The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGQREQ command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQREQ= <cid> causes the requested profile for context number <cid> to become undefined.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

## Defined values

<cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

The following parameters are defined in GSM 03.60 -

<precedence>: a numeric parameter which specifies the precedence class

<delay>: a numeric parameter which specifies the delay class

<reliability>: a numeric parameter which specifies the reliability class

<peak>: a numeric parameter which specifies the peak throughput class

<mean>: a numeric parameter which specifies the mean throughput class

If a value is omitted for a particular class then the value is considered to be unspecified.

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Query +CGQREQ Support

AT+CGQREQ=?

+CGQREQ: "IP",(1-3),(1-4),(1-5),(1-9),(1-18,31)

OK

(2) Set +CGQREQ

AT+CGQREQ=1,1,1,1,1,1

OK

AT+CGQREQ?

+CGQREQ: 1,1,1,1,1,1

OK

## 2.4.3 Quality of Service Profile (Minimum acceptable) +CGQMIN

Table : +CGQMIN parameter command syntax

Command	Possible Response(s)
+CGQMIN=[<cid> [,<precedence > [,<delay>	1) OK 2) ERROR

[,<reliability.> [,<peak> [,<mean>]]]]]	
+CGQMIN?	+CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQMIN: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> [...]]
+CGQMIN=?	+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [...]]

## Description

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message.

The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGQMIN command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGQMIN= <cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

## Defined values

<cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

The following parameters are defined in GSM 03.60 -

<precedence>: a numeric parameter which specifies the precedence class

<delay>: a numeric parameter which specifies the delay class

<reliability>: a numeric parameter which specifies the reliability class

<peak>: a numeric parameter which specifies the peak throughput class

<mean>: a numeric parameter which specifies the mean throughput class

If a value is omitted for a particular class then this class is not checked.

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Query +CGQMIN Support

AT+CGQMIN=?

+CGQMIN: "IP", (1-3), (1-4), (1-5), (1-9), (1-18, 31)

OK

(2) Set +CGQMIN

AT+CGQMIN=1,1,1,1,1,1

OK

AT+CGQMIN?

+CGQMIN: 1,1,1,1,1,1

OK

AT+CGQMIN=1,0,1,1,1,1

OK

AT+CGQMIN?

+CGQMIN: 1,0,1,1,1,1

OK

## 2.4.4 GPRS attach or detach +CGATT

**Table: +CGATT action command syntax**

Command	Possible Response(s)
+CGATT= [<state>]	1) OK 2) ERROR
+CGATT?	+CGATT: <state>
+CGATT=?	+CGATT: (list of supported <state>s)

### Description

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

The read command returns the current Packet Domain service state.

The test command is used for requesting information on the supported Packet Domain service states.

**NOTE:** This command has the characteristics of both the V.25ter action and parameter commands. Hence it has the read form in addition to the execution/set and test forms.

### Defined Values

<state>: indicates the state of PS attachment

0 - detached

1 - attached

Other values are reserved and will result in an ERROR response to the execution command.

### Informative examples

- Initial the HyperTerminal
- Initial the MS

- AT Command

(1) Query +CGATT Support

AT+CGATT=?

+CGATT: (0,1)

OK

(2) Set +CGATT

AT+CGATT=1

OK

AT+CGATT?

+CGATT: 1

OK

## 2.4.5 PDP context activate or deactivate +CGACT

**Table: +CGACT action command syntax**

Command	Possible Response(s)
+CGACT=[<state>[,<cid>[,<cid>[,...]]] ]]	1) OK 2) ERROR
+CGACT?	+CGACT: <cid>, <state> [<CR><LF>+CGACT: <cid>, <state> [...]]
+CGACT=?	+CGACT: (list of supported <state>s)

### Description

The execution command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged. If the requested state for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and then attempts to activate the specified contexts. If the attach fails then the MT responds with ERROR or, if extended error responses are enabled, with the appropriate failure-to-attach error message.

If no <cid>s are specified the activation form of the command activates all defined contexts.

If no <cid>s are specified the deactivation form of the command deactivates all active contexts.

An active secondary context can exist if and only if the corresponding active primary context exists. If the primary PDP context associated with a PDP address is deactivated, all the associated secondary contexts are deactivated too and the data transfer for that PDP address is disabled.

The read command returns the current activation states for all the defined PDP contexts.

The test command is used for requesting information on the supported PDP context activation states.

NOTE. This command has the characteristics of both the V.25ter action and parameter commands. Hence it has the read form in addition to the execution/set and test forms.

## Defined Values

<state>: indicates the state of PDP context activation

0 - deactivated

1 - activated

Other values are reserved and will result in an ERROR response to the execution command.

<cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Query +CGACT Support

AT+CGACT =?

+CGACT: (0,1)

OK

(2) Set +CGACT  
AT+CGACT =1  
OK

AT+CGACT?  
+CGACT: 1,1  
OK

## 2.4.6 Show PDP address +CGPADDR

**Table: +CGPADDR action command syntax**

Command	Possible response(s)
+CGPADDR=[<ci d> [<cid> [...]]]	+CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>,<PDP_addr> [...]]
+CGPADDR=?	+CGPADDR: (list of defined <cid>s)

### Description

The execution command returns a list of PDP addresses for the specified context identifiers.

The test command returns a list of defined <cid>s.

### Defined values

<cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). If no <cid> is specified, the addresses for all defined contexts are returned.

<PDP\_address>: a string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT and +CGDSCONT commands when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP\_address> is omitted if none is available.

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command
  - (1) Query +CGPADDR Support
    - AT+CGPADDR=?
    - +CGPADDR: (1)
    - OK
  - (2) Set +CGPADDR
    - AT+CGPADDR =0
    - +CGPADDR: 1
    - OK
  - AT+CGPADDR =2
    - +CGPADDR: 2
    - OK
  - AT+CGPADDR =1
    - +CGPADDR: 1
    - OK

## 2.4.7 RS network registration status +CGREG

Table: +CGREG parameter command syntax

Command	Possible response(s)
+CGREG=<n>	1) OK 2) ERROR
+CGREG?	1) +CGREG: <n>,<stat>[,<lac>,<ci>] 2) +CME ERROR: <err>
+CGREG=?	+CGREG: (list of supported <n>s)

### Description

The set command controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

NOTE. If the GPRS MT also supports circuit mode services, the +CREG

command and +CREG: result code apply to the registration status and location information for those services.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. Location information elements <lac> and <ci> are returned only when <n>=2 and MT is registered in the network.

## Defined values

<n>:

- 0 disable network registration unsolicited result code
- 1 enable network registration unsolicited result code +CGREG: <stat>
- 2 enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]

<stat>:

- 0 not registered, ME is not currently searching an operator to register to  
The MS is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED.  
The GPRS service is disabled, the MS is allowed to attach for GPRS if requested by the user.
- 1 registered, home network  
The MS is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED INITIATED on the home PLMN.
- 2 not registered, but ME is currently trying to attach or searching an operator to register to  
The MS is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The MS will start a GPRS attach as soon as an allowable PLMN is available.
- 3 registration denied  
The MS is in GMM state GMM-NULL. The GPRS service is disabled, the MS is not allowed to attach for GPRS if requested by the user.
- 4 unknown
- 5 registered, roaming  
The MS is in GMM state GMM-REGISTERED or

## GMM-ROUTING-AREA-UPDATING-INITIATED on a visited PLMN.

<lac>: string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>: string type; two byte cell ID in hexadecimal format

### Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Query +CGREG Support

AT+CGREG=?

+CGREG: (0-1)

OK

(2) Set +CGREG

AT+CGREG=1

OK

AT+CGREG?

+CGREG: 1, 0

OK

## 2.4.8 Select service for MO SMS messages +CGSMS

Table: +CGSMS parameter command syntax

Command	Possible Response(s)
+CGSMS=<service>	1) OK 2) ERROR
+CGSMS?	+CGSMS: <service>
+CGSMS=?	+CGSMS: (list of currently available <service>s)

### Description

The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.

The read command returns the currently selected service or service preference.

The test command is used for requesting information on the currently available services and service preferences.

## Defined Values

<service>: a numeric parameter which indicates the service or service preference to be used

- 0 Packet Domain
- 1 circuit switched
- 2 Packet Domain preferred (use circuit switched if GPRS not available)
- 3 circuit switched preferred (use Packet Domain if circuit switched not available)

Other values are reserved and will result in an ERROR response to the set command.

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Query +CGSMS Support

AT+CGSMS=?

+CGSMS: (0-3)

OK

(2) Set +CGSMS

AT+CGSMS=1

OK

AT+CGSMS?

+CGSMS: 1

OK

## 2.4.9 Request GPRS service 'D'

Table: D command syntax

Command	Possible Response(s)
D*<GPRS_SC>[*[<called_address>] ][*['<L2P>'][*['<cid>']]])	1) CONNECT 2) ERROR

## Description

This command causes the MT to perform whatever actions are necessary to establish communication between the TE and external PDN.

The V.25ter'D'(Dial) command causes the MT to enter the V.25ter online data state and, with the TE, to start the specified layer2 protocol. The Mt shall return CONNECT to confirm acceptance of the command prior to entering the V.25ter online data state. No further commands may follow on the AT command line.

The detailed behavior after the online data state has been entered is dependent on the PDP type. It is described briefly in clauses 8 (for X.25) and 9 (for IP) of GSM 07.06. GPRS attachment and PDP context activation procedures may take place prior to or during the PDP startup if they have not already been performed using the +CGATT and +CGACT commands.

When the layer 2 protocol has terminated, either as a result of orderly shut down of the PDP or an error, the MT shall enter V.25ter command state and return the NO CARRIER final result code.

If <called\_address> is supported and provided, the MT shall automatically set up a virtual call to the specified address after the PDP context has been activated.

If <L2P> and <cid> are supported, their usage shall be the same as in the +CGDATA command. The +CGDCONT, +CGQREQ, etc. commands may then be used in the modem initialization AT command string to set values for PDP type, APN, QoS etc.

If <L2P> is not supported or is supported but omitted, the MT shall use a layer 2 protocol appropriate to the PDP type.

If <cid> is not supported or is supported but omitted, the MT shall attempt to activate the context using:

- (a) any information provided by the TE during the PDP startup procedure, e.g. the TE may provide a PDP type and/or PDP address to the MT, or
- (b) a prior knowledge, e.g. the MT may implement only one PDP type, or
- (c) using the 'Empty PDP type' (GSM 04.08). (No PDP address or APN shall be sent in this case and only one PDP context subscription record shall be present in the HLR for this subscriber.)

This command may be used in both normal and modem compatibility modes.

**NOTE:**

The dial string conforms to the syntax specified in GSM 02.30.

**Defined Values**

<GPRS\_SC>: (GPRS Service Code) a digit string (value 99) which identifies a request to use the GPRS

<called\_address>: a string that identifies the called party in the address space applicable to the PDP. For communications software that does not support arbitrary characters in the dial string, a numeric equivalent may be used. Also, the character comma ',' May be used as a substitute for the character period '.'.

[<host>][@ [<port>] [ @ [<protocol>]]]

where <host>, <port> and <protocol> are defined in the +CGDCONT description. For communications software that does not support arbitrary characters in the dial string, a numeric equivalent may be used. However, this should be avoided if at all possible.

<L2P>: a string which indicates the layer 2 protocol to be used (see +CGDATA command). For communications software that does not support arbitrary characters in the dial string, a numeric equivalent shall be used:

- 0 NULL
- 1 PPP
- 2 PAD
- 3 X25
- 9yyy M-xxxx

Other values are reserved and will result in an ERROR response to the set command.

**NOTE:**

V.250 (and certain communications software) does not permit arbitrary

characters in the dial string. The <L2P> and <called\_address> strings are therefore specified as containing digits (0-9) only.

<cid> : a digit string which specifies a particular PDP context definition (see +CGDCONT command).

## 2.4.10 3G Quality of Service Profile (Negotiated) +CGEQNEG

**Table : +CGQNEG parameter command syntax**

Command	Possible Response(s)
+CGEQNEG =[<cid>[,<cid>[,...]]]	+CGEQNEG: <cid>, <Traffic class>, <Maximum bitrate UL>, <Maximum bitrate DL>, <Guaranteed bitrate UL>, <Guaranteed bitrate DL>, <Delivery order>, <Maximum SDU size>, <SDU error ratio>, <Residual bit error ratio>, <Delivery of erroneous SDUs>, <Transfer delay>, <Traffic handling priority> [<CR><LF>]+CGEQNEG: <cid>, <Traffic class>, <Maximum bitrate UL>, <Maximum bitrate DL>, <Guaranteed bitrate UL>, <Guaranteed bitrate DL>, <Delivery order>, <Maximum SDU size>, <SDU error ratio>, <Residual bit error ratio>, <Delivery of erroneous SDUs>, <Transfer delay>, <Traffic handling priority> [...]]
+CGEQNEG=?	+CGEQNEG: (list of <cid>s associated with active contexts)

### Description

This command allows the TE to retrieve the negotiated QoS profiles returned in the Activate PDP Context Accept message.

The execution command returns the negotiated QoS profile for the specified context identifiers, <cid>s. The QoS profile consists of a number of parameters, each of which may have a separate value.

The test command returns a list of <cid>s associated with active contexts.

## Defined values

<cid>: a numeric parameter which specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands).

The following parameters are defined in 3GPP TS 23.107 [46]:

<Traffic class>: a numeric parameter that indicates the type of application for which the UMTS bearer service is optimised.

0 - conversational

1 - streaming

2 - interactive

3 - background

Other values are reserved.

<Maximum bitrate UL>: a numeric parameter that indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. +CGEQNEG:...,32, ...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Maximum bitrate DL>: a numeric parameter that indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. +CGEQNEG:...,32, ...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate UL>: a numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. +CGEQNEG:...,32, ...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate DL>: a numeric parameter that indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. +CGEQNEG:...,32, ...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery order>: a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

0 - no

1 - yes

Other values are reserved.

<Maximum SDU size>: a numeric parameter that (1,2,3,...) indicates the maximum allowed SDU size in octets (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<SDU error ratio>: a string parameter that indicates the target value for the

fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as "mEe". As an example a target SDU error ratio of  $5 \cdot 10^{-3}$  would be specified as "5E3" (e.g. +CGEQNEG:..., "5E3",...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Residual bit error ratio>: a string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as "mEe". As an example a target residual bit error ratio of  $5 \cdot 10^{-3}$  would be specified as "5E3" (e.g. +CGEQNEG:..., "5E3",...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery of erroneous SDUs>: a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.

0 - no

1 - yes

2 - no detect

Other values are reserved.

<Transfer delay>: a numeric parameter (0,1,2,...) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Traffic handling priority>: a numeric parameter (1,2,3,...) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

## Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

(1) Query +CGEQNEG Support

AT+CGEQNEG=?

+CGEQNEG: 2,3

OK

(2) AT+ CGEQNEG =2,3

+ CGEQNEG: 2,3,128,128,0,0,0,1500,"1E3","4E3",1,0,0

+ CGEQNEG: 3,3,256,256,0,0,0,1500,"1E4","4E3",0,0,0

OK

## 2.5 H18 - specific AT Commands

### 2.5.1 Reset \$QCPWRDN

Table: \$ QCPWRDN parameter command syntax

Command	Possible response(s)
\$QCPWRDN	OK
	OK

#### Description

This command is used to reset the module. The module is controlled by hardware. we do not support SW power off. (If you want to save power, please turn off RF to save power (AT+CFUN=4).)

#### Defined values

Listing the parameters and defining the values

#### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

```
/* power off the module */
AT$ QCPWRDN
OK
```

OK

### 2.5.2 LED Setting \$ QLED

Table: \$QLED parameter command syntax

Command	Return
\$QLED =<mode>	OK ERROR
\$QLED ?	\$QLED : <mode>
\$QLED =?	\$QLED :(<mode>)

## Description

This command is used to set LED mode.

## Defined values

<mode>:

- 1: turn on
- 0: turn off

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT\$QLED=1

OK

AT\$QLED?

\$QLED:1

AT\$QLED=?

\$QLED: (0,1)

## 2.5.3 Set PCM Format \$QAPCMF

Table: \$ QAPCMF parameter command syntax

Command	Possible Response(s)
\$ QAPCMF =<act>	(1) OK (2) ERROR
\$ QAPCMF?	\$ QAPCMF: <type>
\$ QAPCMF=?	\$ QAPCMF: (list supported<type>s)

## Description

This command is used to set PCM format.

## Defined values

<type>:

0: a Law, 8bit

1: u Law, 8bit

2: linear, 16bit

### Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT\$ QAPCMF?

\$ QAPCMF: 1

AT\$ QAPCMF =0

OK

AT\$ QAPCMF =?

\$ QAPCMF: (0,1,2)

### 2.5.4 Set the TX Volume Gain of ADSP \$QADSPTXV

**Table: \$ QADSPTXV parameter command syntax**

Command	Possible Response(s)
\$ QADSPTXV =<act>	(1) OK (2) ERROR
\$ QADSPTXV?	\$ QADSPTXV: <volume>
\$ QADSPTXV=?	\$ QADSPTXV: (list supported < volume >s)

### Description

This command is used to set the tx volume of ADSP.

### Defined values

< volume >:

The number of tx volume gain.

### Informative examples

- Initial the HyperTerminal

- Initial the MS

- AT Command

AT\$ QADSPTXV?

\$ QADSPTXV: 100

AT\$ QADSPTXV =0

OK

AT\$ QADSPRXV =?  
\$ QADSPRXV: (0-255)

## 2.5.5 Set the RX Volume Gain of ADSP \$QADSPRXV

**Table: \$ QADSPRXV parameter command syntax**

Command	Possible Response(s)
\$ QADSPRXV =<act>	(1) OK (2) ERROR
\$ QADSPRXV?	\$ QADSPRXV: <volume>
\$ QADSPRXV=?	\$ QADSPRXV: (list supported < volume >s)

### Description

This command is used to set the rx volume of ADSP.

### Defined values

< volume >:

The number of rx volume gain.

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT\$ QADSPRXV?  
\$ QADSPRXV: 100

AT\$ QADSPRXV =0  
OK

AT\$ QADSPRXV =?  
\$ QADSPRXV: (0-255)

## 2.5.6 Enable/Disable PCM function \$QAPCM

**Table: \$QAPCM parameter command syntax**

Command	Possible Response(s)

\$QAPCM=<act>	(1) OK (2) ERROR
\$QAPCM?	\$QAPCM: <act>
\$QAPCM=?	\$QAPCM: (list supported <act>s)

## Description

This command is used to enable/disable PCM function. It will set the audio path to PCM path.

## Defined values

<act>:

- 0: Disable PCM function
- 1: Enable PCM function

## Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT\$QAPCM?

\$QAPCM: 1

AT\$QAPCM=0

OK

AT\$QAPCM=?

\$QAPCM: (0,1)

## 2.5.7 Test GPIO \$QTGPIO

Hardware:

GPIO\_PCM\_SYNC must connect with GPIO\_PCM\_DIN, GPIO\_PCM\_CLK must connect with GPIO\_PCM\_DOUT

**Table: \$QTGPIO parameter command syntax**

Command	Possible response(s)

\$QTGPIO=<mode>	OK
	ERROR

### Description

This command is used to set LED mode.

### Defined values

<mode>:

1: start gpio test

### Informative examples

- Initial the HyperTerminal
- Initial the MS
- AT Command

AT\$QTGPIO=1

OK

## 2.5.8 Get SIM status \$QSIM

Table: \$QSIM parameter command syntax

Command	Possible Response(s)
\$QSIM	(1) \$QSIM: READY (2) +CME ERROR: SIM failure (3) ERROR

### Description

This command is used to get current SIM card status

### Informative examples

AT\$QSIM

\$QSIM: READY

AT\$QSIM

ERROR (+CMEE=0)

+CME ERROR: 13 (+CMEE=1)

+CME ERROR: SIM failure (+CMEE=2)

AT\$QSIM

ERROR (in restricted mode)

## 2.6 Error Message

### 2.6.1 Mobile Equipment error result code +CME ERROR: <unsolicited><p>

**Table: +CME ERROR parameter Syntax**

Command	Possible response(s)
	Wrong: +CME ERROR: <err>

#### Description

The operation of +CME ERROR:<err> result code is similar to the regular ERROR result code: if +CME ERROR:<err> is the result code for any of the commands in a command line, none of the following commands in the same command line is executed.(neither ERROR nor OK result code shall be returned as a result of a completed command line execution). The format of <err> can be either numeric or verbose. This is set with command +CMEE.

#### Defined value

Code of <err>	Meaning
0	Phone failure
1	No connection to phone
2	phone-adaptor link reserved
3	Operation not allowed
4	Operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	Incorrect password
17	SIM PIN2 required
18	SIM PUK2 required

20	Memory full
21	Invalid index
22	Not found
23	Memory failure
24	Text string too long
25	Invalid characters in text string
26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
32	Network not allowed – emergency calls only
33	Network busy
34	Network operation failed
35	Network incorrect password
36	PLMN no service
37	Hardware failure
38	ACM Max exceeded
39	FDN not matched
40	Network personalization PIN required
41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required
51	Voice memo memory problem
52	Voice dial training fail
53	Voice dial need more sample
54	Voice dial similar sample exist
55	Voice dial recognize fail
56	Voice erase not finished
57	Voice erase finished
58	Voice erase restart
100	Unknown
103	illegal MS
106	illegal ME

107	GPRS service not allowed
111	PLMN not allowed
112	Location not allowed
113	Roaming not allowed in Location Area
132	GPRS service option not supported
133	requested service option not subscribed
134	service option temporarily out of order
148	unspecified GPRS error
150	invalid module class
512	fail to abort
513	ACM reset needed

## 2.6.2 Message Service Failure Result Code +CMS ERROR: <unsolicited><p>

**Table: +CMS ERROR parameter Syntax**

Command	Possible response(s)
	Wrong: +CMS ERROR: <err>

### Description

Final result code +CMS ERROR: <err> indicates an error related to mobile equipment or network. The operation is similar to ERROR result code. None of the following commands in the same command line is executed. Neither ERROR nor OK result code shall be returned. ERROR is returned normally when error is related to syntax or invalid parameters.

### Defined Values

0...127	GSM 04.11, annex E-2 values
1	Unassigned (unallocated) number
8	Operator determined barring
10	Call barred
21	Short message transfer rejected
27	Destination out of service
28	Unidentified subscriber
29	Facility rejected
30	Unknown subscriber
38	Network out of order

41	Temporary failure
42	Congestion
47	Resources unavailable, unspecified
50	Requested facility not subscribed
69	Requested facility not implemented
81	Invalid short message transfer reference value
95	Invalid message, unspecified
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message not compatible with short message protocol state
99	Information element non-existent or not implemented
111	Protocol error, unspecified
127	Interworking, unspecified
128...255	TP Failure-Cause(TP-FCS) values according to GSM 03.40
128	Telematic interworking not supported
129	Short message Type 0 not supported
130	Cannot replace short message
143	Unspecified TP-PID error
144	Data coding scheme not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be actioned
161	Command unsupported
175	Unspecified TP command error; either the message type identifier is other than SMS command, or the service center address is corrupt
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred
208	SIM SMS storage full
209	No SMS storage capability exceeded
210	Error in MS
211	Memory capacity exceeded
255	Unspecified error cause
300	ME failure

301	SMS service of ME reserved; the phone is busy sending a message
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode parameter
305	Invalid text mode parameter
310	SIM not inserted
311	SIM PIN necessary
312	SIM PIN necessary for PH-SM
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	Memory failure; write of SMS to specified memory failed
321	Invalid memory index
322	Memory full
330	SMSC address unknown
331	No network service
332	Network timeout
500	Unknown error
...511	Other values within the range from 256 to 511 are reserved
512	Fail to abort
513	ACM reset needed
520	Invalid parameter in primitive
521	Entity is busy
523	SMS service not supported on SIM
555	Memory full, and at least one SMS in SC

### 2.6.3 Extended Error result code +EXT ERROR: <unsolicited><p>

**Table: +EXT ERROR parameter Syntax**

Command	Possible response(s)
	Wrong: +EXT ERROR: <err>

### Defined Values

Code of <err>	Meaning
1	Parameter not allowed
2	Data corrupted
3	Internal error
4	Call table full
5	Service table full
6	Call not found
7	No data-call supported
8	One call on hold
9	Hold call not supported for this type
10	Number not allowed by FDN
11	Number not allowed by BDN
12	Parallel USSD not supported
13	Fax minimum speed condition
14	Conflict with command details
15	Error unknown
100	Other error

#### 2.6.4 UMTS specific cause values for call control +CEER: **<unsolicited><p>**

See 3GPP 24.008 Annex H for more detail information.

#### Defined Values

ID	Meaning
1	unassigned number
3	no route to destination
6	channel unacceptable
8	operator determined barring
16	normal call clearing
17	user busy
18	no user responding
19	user alerting, no answer
21	call rejected
22	number changed
26	non selected user clearing
27	destination out of order

28	invalid number format
29	facility rejected
30	response to status enquiry
31	normal, unspecified
34	no channel available
38	network out of order
41	temporary failure
42	switching equipment congestion
43	access information discarded
44	requested channel unavailable
47	recources unavailable
49	quality of service unavailable
50	requested facility unsubscribed
55	incoming calls barred within CUG
57	bearer capability not authorized
58	bearer capability not available
63	service not available
65	bearer service not implemented
68	ACM reached ACM maximum
69	facility not implemented
70	only restricted bearer cap. avail.
79	service not implemented
81	invalid TI
87	no member of CUG
88	incompatible destination
91	invalid transit network selection
95	incorrect message
96	invalid mandatory information
97	message type not implemented
98	message type incompatible
99	info element not implemented
100	conditional info element error
101	message incompatible
102	recovery on time expiry
111	protocol error
127	interworking error
200	bearer service not available

201	no TI available
202	timer 303 expiry
203	establishment failure
210	no error
211	operation failed
212	timeout
213	bearer service not compatible